

For NX100 for Industrial Robot MOTOMAN
Ladder Editing Software for Personal Computers
Ladder Editor 32 for NX100
Operator's Manual

Upon receipt of the product and prior to initial operation, read this instruction thoroughly, and retain for future reference.

Do not submit this electronic data to the customer.

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YOU MUST READ THE MANUAL WHICH ENCLOSED
WITH A ROBOT.



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1 INTRODUCTION

1.1 Hardware Requirements for Ladder Editor 32NX

Ladder Editor 32NX operates with the configurations shown below.

OS	Japanese Microsoft Windows XP/2000
Required Memory	16 Mbytes or more
CPU	Pentium or Pentium compatible processor
Hardware Disk Capacity for Installation	10 Mbytes or more
Disk Drive	Hard disk drive and CD-ROM drive
Display	Supported by MS-Windows
Mouse	Supported by MS-Windows
Robot Controller	NX100
Hardware Lock Key	Used under single user environment. For details, refer to the following section “Hardware Lock.”

Note: A personal computer and OS are not included with this software.

Table 1.1 Hardware Requirements for Ladder Editor 32NX

For NX100 concurrent I/O, refer to the NX100 Concurrent I/O (Manual No. RE-CKI-A442)

1.2 Hardware Lock Key

For proper operation, connect provided hardware lock key to personal computer before using this software.

Two types of hardware lock keys are available;

- USB type
- D-sub type

Followings are the connecting methods of each key type.

Connecting of USB type key

Check and execute the following items before connecting the key to USB port.

<Check the computing environment>

Multi-connection of USB type key is not available for one USB port because of hardware structure. Therefore, only one key should be connected to one USB port. When multi-connecting USB keys installing multiple offline software into one personal computer, use the personal computer which is provided same numbers of USB ports as the number of software to be installed.

<Installation of driver>

Be sure to install the driver ***with key detached*** from personal computer.

Execute "¥SentinelDriver¥SSD5411-32bit.EXE" of installation CD-ROM. Refer to "¥SentinelDriver¥Manual¥us¥Readme.pdf" for the installation procedure.

Note: 1. When installing the driver under WindowsXP/2000 environment, be sure to login in administrator mode in order to add files to system folder and input information in registry.

2. If a key is connected to personal computer before installing the driver, Windows wizard ([Add New Hardware] Wizard) starts up. In this case, push [cancel], and detach the key from personal computer and then install the driver.

Connecting of D-sub type key

Connecting the key to the printer port().

<Installation of driver>

Execute "¥SentinelDriver¥SSD5411-32bit.EXE" of installation CD-ROM. Refer to "¥SentinelDriver¥Manual¥us¥Readme.pdf" for the installation procedure.

Note: 1. Be sure to install the driver under WindowsXP/2000 environment.

2. When installing the driver under WindowsXP/2000 environment, be sure to login on administrator mode in order to add files to system folder and input information in registry.

Refer to "26.4 Frequently-asked questions" for other countermeasures concerning hardware lock key.

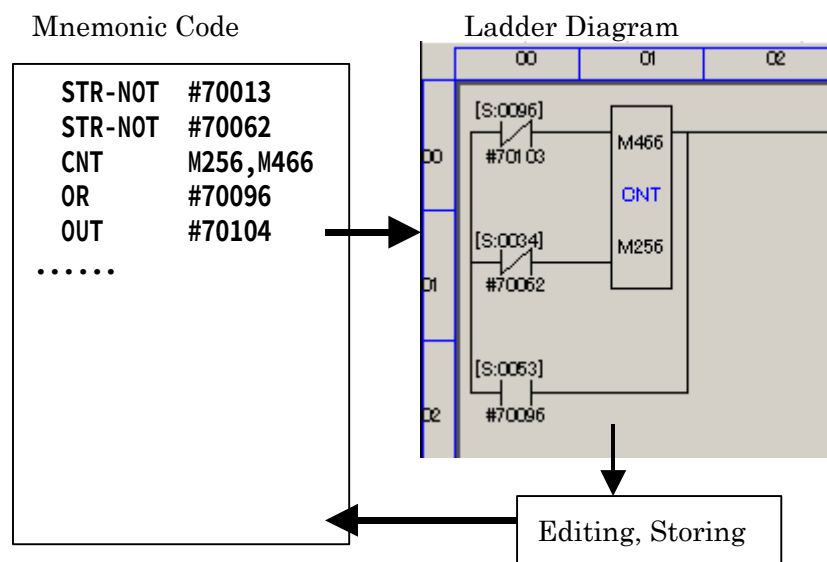
1.3 Ladder Editor 32NX

1.3.1 What is Ladder Editor 32NX?

The robot controller (NX100) has a concurrent I/O function that processes I/O related control independently from the manipulator, and in parallel with the manipulator operation. Ladder Editor 32NX software is used to graphically display ladder programs with the above function as a signal connection diagram, or to edit ladder programs easily such as pasting command parts by a drag-and-drop operation using the mouse.

1.3.2 Features of Ladder Editor 32NX

Ladder mnemonic code can be edited with an image of a ladder diagram.



With the “ladder preview” display, the entire line of the ladder program can be easily previewed.

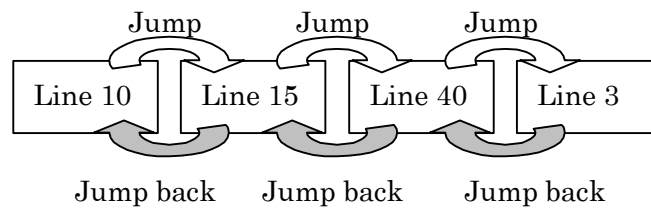
Simple drag and drop operation can edit connections between ladder parts.

Cross reference function is enriched.

Information such as relay No. use state or the place where an arbitrary relay No. is used can be referenced easily.

History jump function is available.

This function records the history of jumping to other lines, and easily returns to the previous line before jumping.



Printing function is enriched.

Cross reference information can also be printed, as well as ladder diagrams. This function is very useful when a created ladder is stored as reference material.

Print images are stored in the text file.

Print images obtained by printing ladder diagrams can be stored in the text file. This function is useful when the data is filed and stored as an electronic document.

1.4 Teams

The following terms are frequently used in this manual.

Terms	Description
Ladder Parts	Object of matrix composing a ladder program such as STR, TMR or GRP
Set Value	Value set to ladder parts such as relay numbers, register numbers or constants
Line	One line indicates one section divided with OUT codes in a ladder mnemonic. Normally, there is one OUT part per line (excluding when GRP parts are used).

2 HOW TO INSTALL

2.1 Execution of Setup Program

The following describes how to install Ladder Editor 32NX on Windows.

1. Turn ON the power supplies of the computer and display unit to start up Windows.
To install Ladder Editor 32NX in Windows XP/2000, log on with your NT administrator's permission. Without the administrator's authority, the DLL files related to the Windows system may not be updated.
2. Terminate all Windows programs.
3. Insert the installation CD-ROM into the CD-ROM drive.
4. Start up [Start] – [Setting] – [Control Panel] – [Add/Remove Programs].

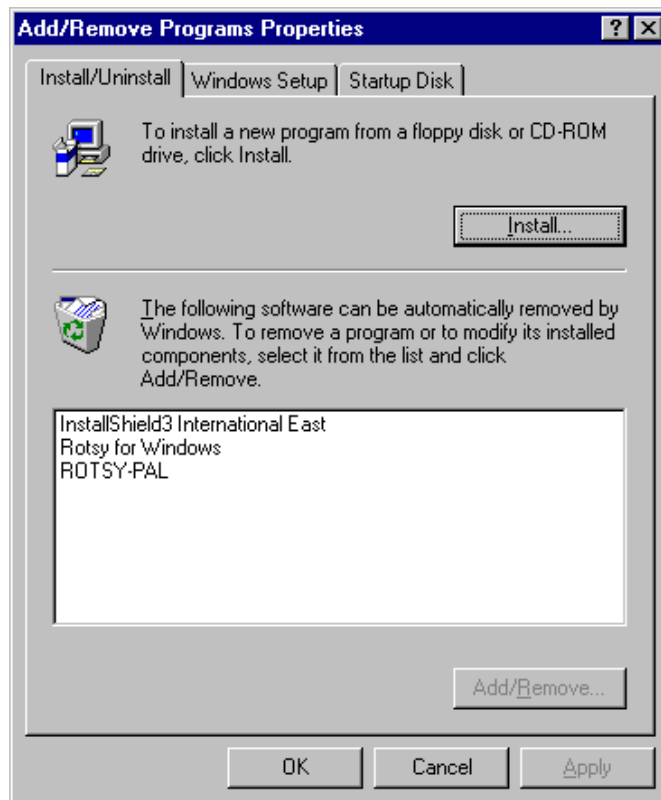


Fig. 2-1 "Add/Remove Programs" Display

5. Click the [Install] button and set “setup.exe” following the instructions in the display.

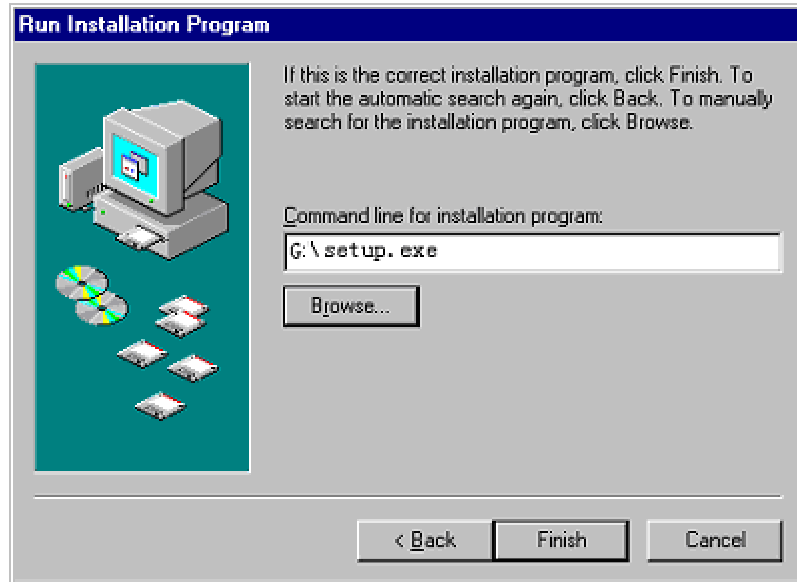


Fig. 2-2 “Setup Program Setting” Display

6. Clicking the [Finish] button starts up the setup program. Proceed by following the instructions in the display.
7. When setup is completed, [Ladder Editor 32NX] is registered in [Start] – [Program] – [Motoman] – [Ladder Editor 32NX] group.

Note: If Ladder Editor 32NX must be installed again for some reason, re-install it after selecting [Ladder Editor 32NX] in [Add/Remove Application] in the “Add/Remove Application” display (Fig. 2-1), and deleting all the files of the Ladder Editor 32NX application.

3 LADDER EDITOR 32NX BASIC DISPLAY

The following shows the “basic” display of Ladder Editor 32NX. The “basic” display is divided into two displays: “ladder preview” display and “ladder editing” display. Editing is available as referring to the ladder image before and after the ladder diagram in the editing line.

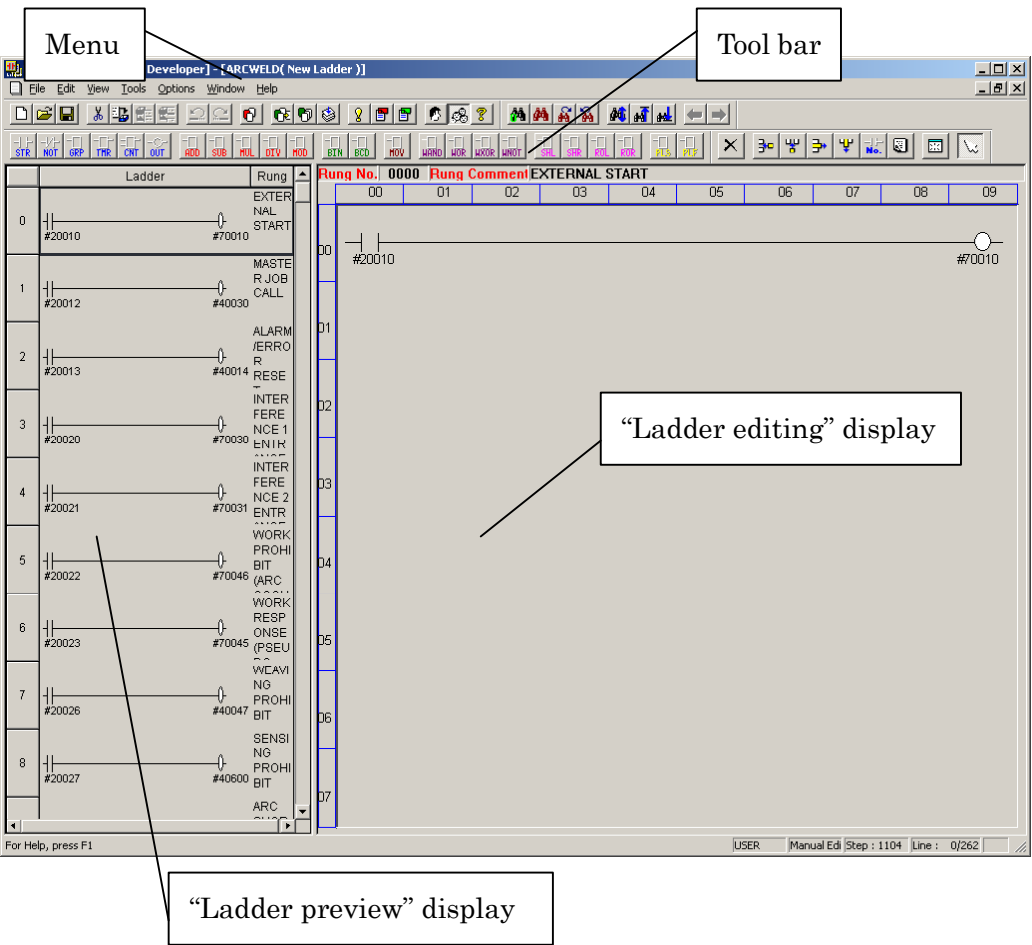


Fig. 3-1 "Basic" Display

4 FLOWCHART OF BASIC EDITING

The following shows the basic flowchart of ladder editing.

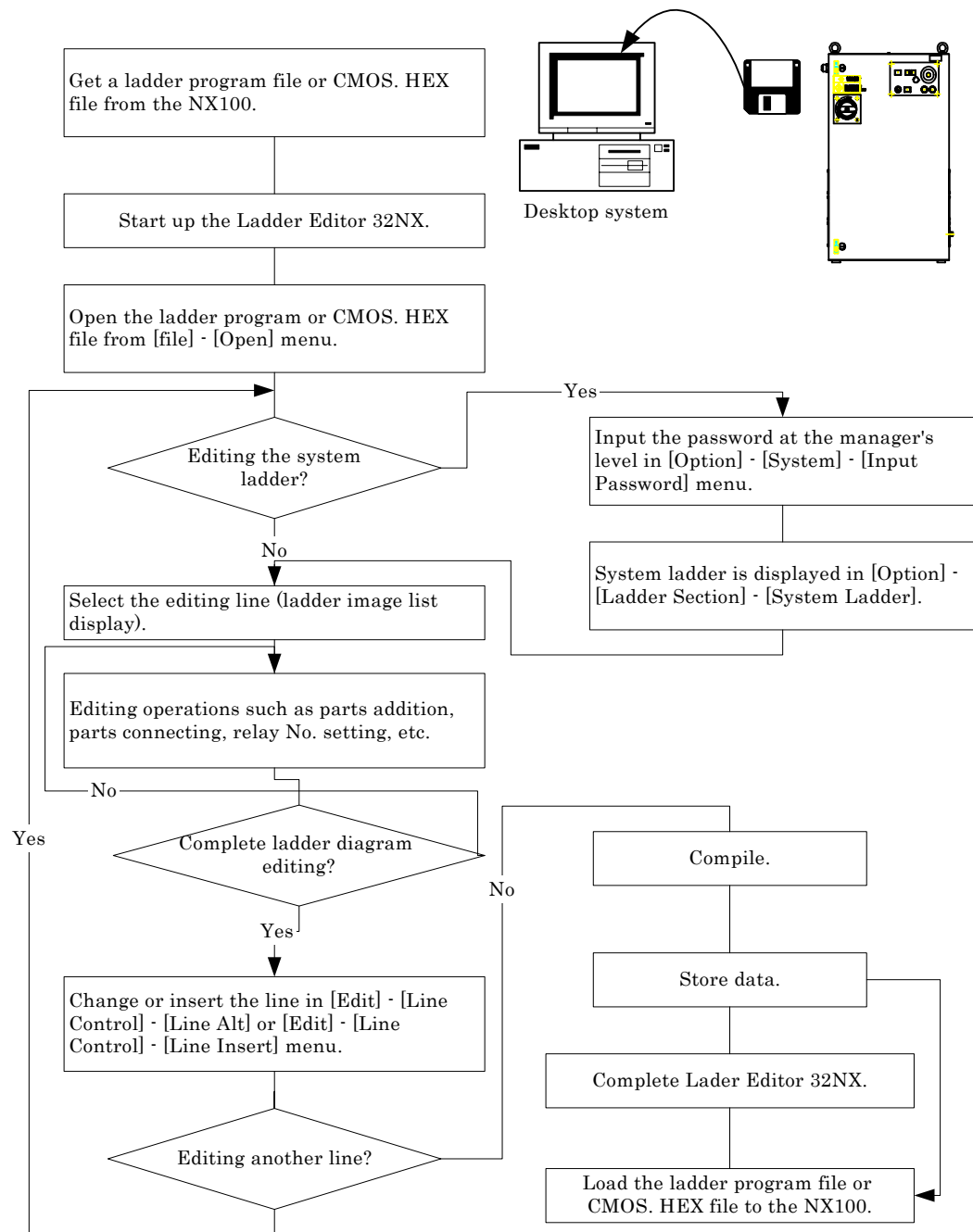


Fig. 4-1 Ladder Editing Operation Flow

5 STARTING AND ENDING LADDER EDITOR 32NX

5.1 How to Start

To start up Ladder Editor 32NX, open the [Start] menu in the Windows tool bars, and select “Ladder Editor 32NX” from [Program] – [Motoman] – [Ladder Editor 32NX].

When this application is initially started up or when the [Manage type] is set to “Easy Mode”, the [Enter Password] dialog box for the Easy Mode (Fig. 5-1) appears. When the [Manage type] is set to “Standard Mode”, the [Enter Password] dialog box for the Standard Mode (Fig. 5-2) appears. (For details on managing user accounts, refer to “25 USER INFORMATION MANAGEMENT”.)

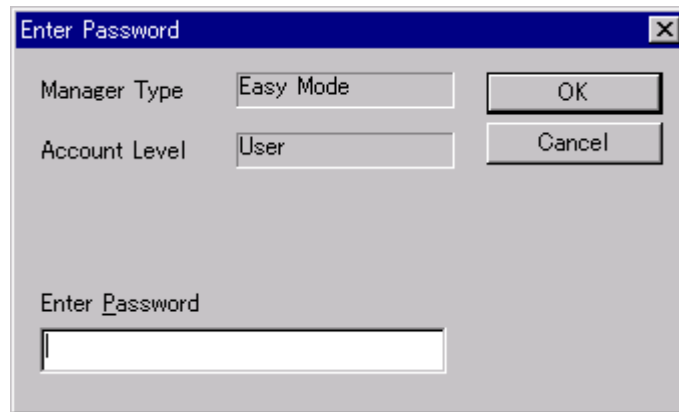


Fig. 5-1 [Enter Password] Dialog Box for Easy Mode

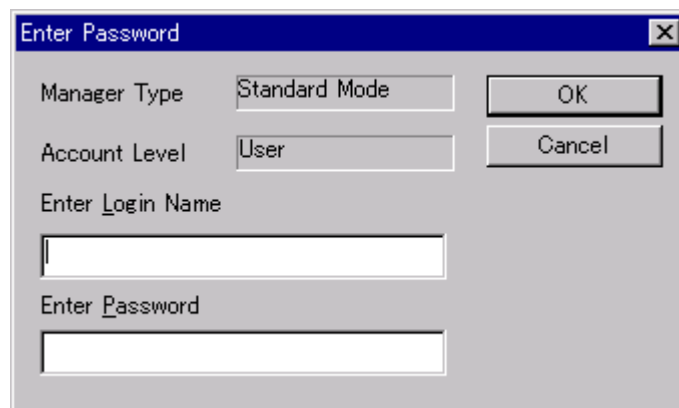


Fig. 5-2 [Enter Password] Dialog Box for Standard Mode

If the “Require Password to Start Ladder Editor” check box is cleared in the [User Manager] dialog box, these dialog boxes for inputting passwords do not appear.

The “Default User Names and Password List” managed and stored by the software administrator describes the “Login Name” and “Password”. This list is included with the shipment.

Input the password, and the “Startup” display for Ladder Editor 32NX appears as shown in Fig. 5-3 appears.

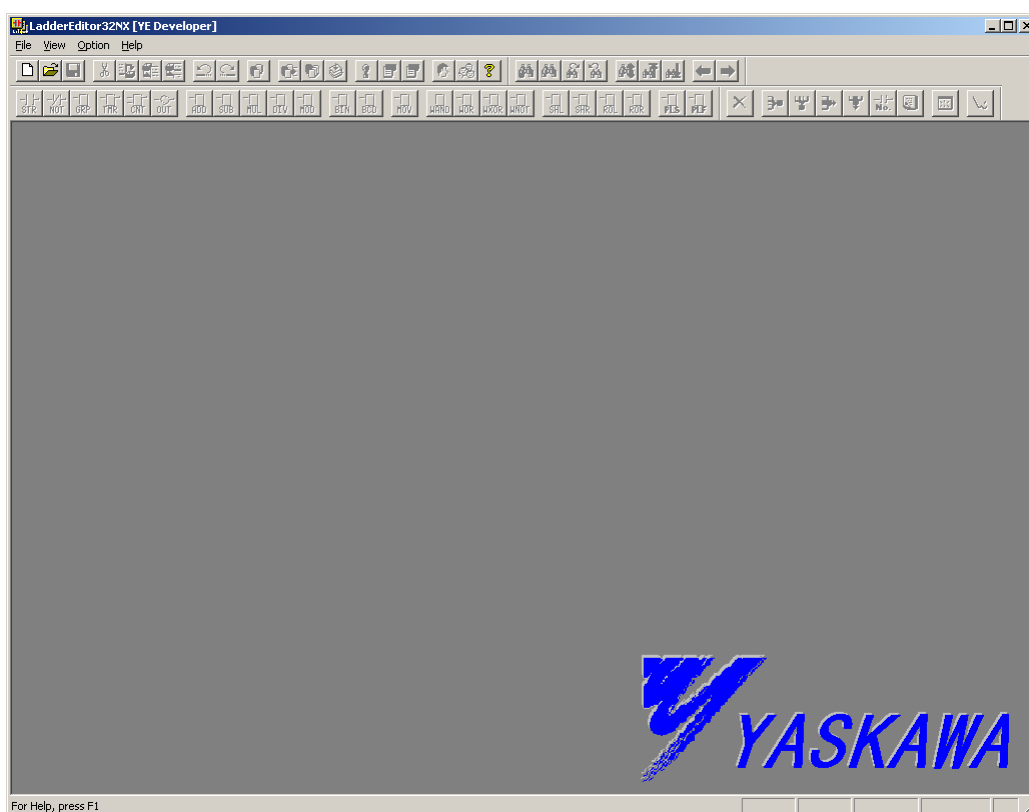


Fig. 5-3 “Startup” Display

5.2 How to End

Selecting [File] – [Exit] in the Ladder Editor 32NX menu can close the Ladder Editor 32NX.

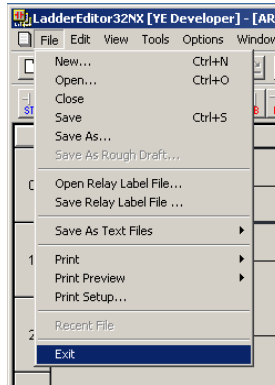


Fig. 5-4 Exit Menu

6 READING AND STORING EDITED LADDER FILES

6.1 Reading Ladder Data

To perform ladder editing, read in the ladder program to be edited by Ladder Editor 32NX.

The following two types of files can be edited by Ladder Editor 32NX:

- Ladder program file (text file)
- CMOS file (binary file)

[How to Operate]

1. Selecting [File] – [Open] menu (or  button) opens the [Open] dialog box.



Fig. 6-1 [Open] Dialog Box

2. To read in a ladder program file, select the ladder program file and click the [Open] button.
To read in a CMOS file, select “CMOS file (*.HEX)” from [Files of type] combo box in [Open] dialog box in Fig. 6-1 . When the list of CMOS. HEX files appears, select the CMOS file to be edited, and click the [Open] button.

6.2 Reading Several Ladder Files

The Ladder Editor 32NX is an MDI (Multi Document Interface) application to read in several ladder program files simultaneously. To select the ladder program to be edited, select the file name displayed in the [Window] menu, or select the window with the targeted ladder program among overlapped windows by selecting [Window] - [Cascade].

In addition, the targeted ladder program can also be selected where several editing windows are displayed and overlapped by selecting [Window] – [Cascade] menu.

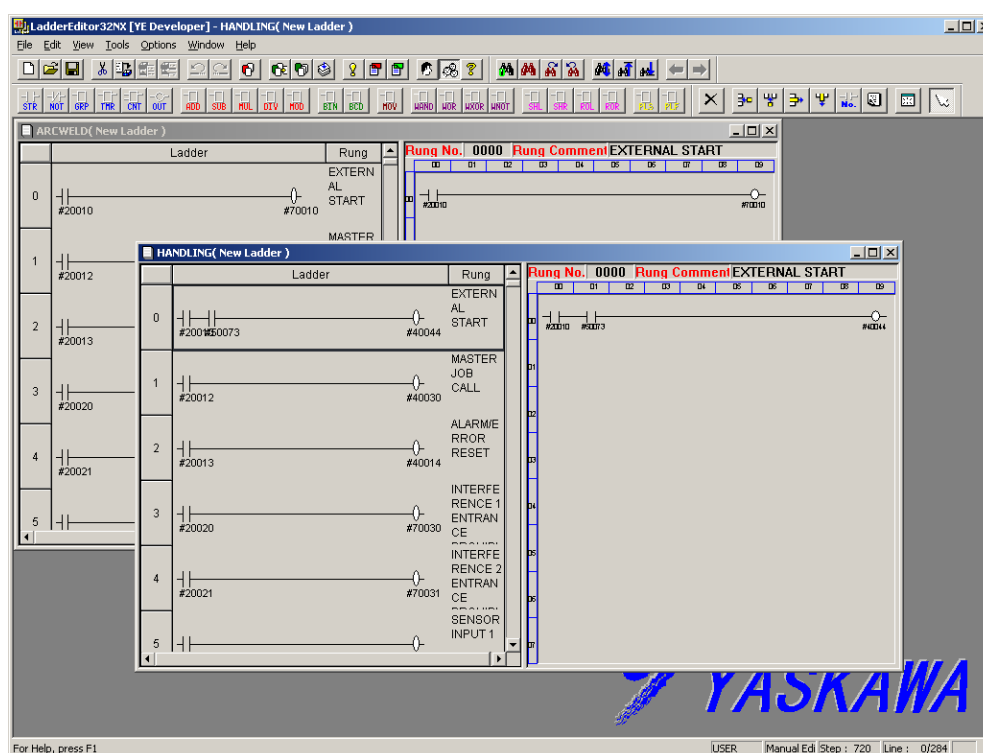


Fig. 6-2 “Editing Window Overlapped” Display

6.3 Storing Edited Data

When ladder editing is completed, store the information in a file. **Before storing, compile the data when a ladder was edited by Ladder Editor 32NX.** Unless compiled, data may not be stored completely.

[How to Operate]

1. Selecting [File] – [Save] stores the overwritten data on an existing file.
2. Selecting [File] – [Save As] displays the [Save As] dialog box. Set an arbitrary file name to the data to be stored.

To store the file, the following three types of file forms are available, depending on the method used to read in a file.

6.3.1 Storing when a Ladder Program File (CIOPRG.LST) is Open

When a ladder program file is read in, only a ladder program file (text file) can be stored in an output file form.

6.3.2 Storing when a CMOS File (CMOS.HEX) is Open

When a CMOS file is read in, the data can be stored in the two types of file forms, a ladder program file (text file) and a CMOS file (binary file), as an output file.

6.3.3 Storing a Ladder Program that is Being Edited

A ladder program being edited cannot be stored if it has a detected error, even if compiled. The ladder program being edited can be stored as a work file. For details, refer to paragraph “23.6 Rough Draft File Forced Output Function”.

7 CREATING A LADDER DIAGRAM

To create a new ladder program, use the standard ladder program as the base for editing. The standard ladder program is supplied as a template.

[How to Operate]

1. Selecting [File] – [New] displays the dialog box shown in Fig. 7-1.

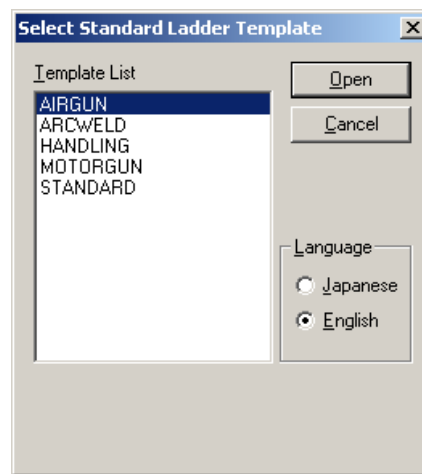


Fig. 7-1 [Select standard ladder template] Dialog Box

2. Select the template to be set and click the [Open] button.

8 EDITING A LADDER DIAGRAM

All ladder diagrams are edited in the “Basic” Display shown in Fig. 3-1.

8.1 Ladder Parts Specifications

The Ladder Editor 32NX supports the ladder parts corresponding to the new ladder codes employed for the NX100.

For the details on such ladder parts, refer to the [Ladder Parts Specifications] of [Help] menu.

8.2 Selecting a Ladder Edited Line

A ladder diagram is edited in the “ladder editing” display, and the line to be displayed in the “ladder editing” display is selected in the “ladder preview” display (Fig. 8-1). In the “ladder preview” display, images of the ladder diagrams of all the lines can be viewed set in the current ladder section (either system section or user section).

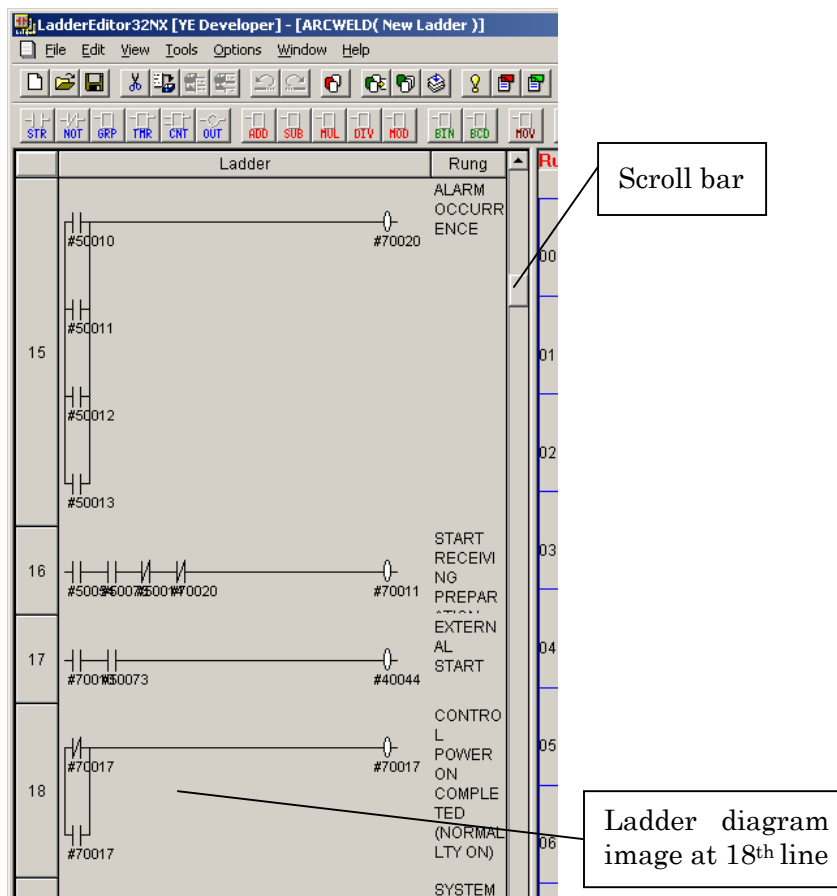


Fig. 8-1 “Ladder Preview” Display

To refer to the ladder image of a line that is not displayed on the display, scroll using the scroll bar.

In the “ladder preview” display, right-click the mouse to select the line to be edited and the “ladder editing” display with the ladder diagram of the selected line will appear.

8.3 Adding New Ladder Parts

New ladder parts can be added when editing a ladder diagram.

Add ladder parts in the following manner.

[How to Operate]

1. Enter the parts addition mode (select parts to be added).

Selecting [Tool] – [Add Instructions] displays the list of ladder parts to be added. Then select the ladder parts. Or select the parts to be added from the ladder parts tool bar (refer to “26.2.4 Ladder Parts Tool Bar”).

Example) Adding the ladder parts of the NC contact

Select [Tool] – [Add Instructions] – [STR-NOT], or tool bar .

2. Paste new parts on the matrix to be added in the “ladder editing” display.

When the ladder parts to be added are determined, the mouse form changes in the “ladder editing” display. The selected ladder parts appear at the side of the mouse pointer. **Left-click** on the matrix location where the ladder parts are to be added.

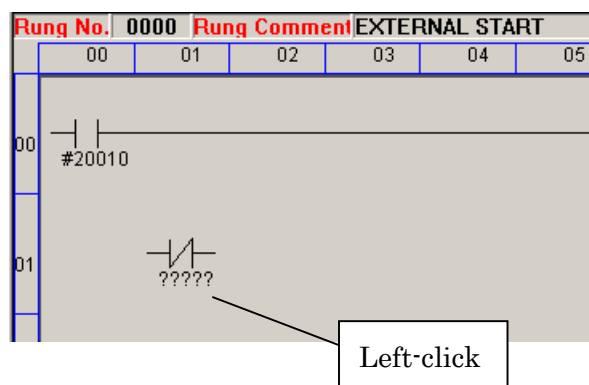


Fig. 8-2 Paste of Ladder Parts

“???” may appear for the added ladder parts. This is because the relay No. or register No. is not set for these ladder parts, and it is not an error. Set the relay No. or register No.. For the setting of the relay Nos. or register Nos., refer to the paragraph “8.6 Setting Relay No., Register No. and Constants”.

8.4 Deleting Ladder Parts

Delete the ladder parts in the following manner.

[How to Operate]

1. Enter the parts deletion mode.

Select [Tool] – [Edit Instructions] – [Delete Instructions], or select  from the parts control tool bar (refer to “26.2.2 Parts Control Tool Bar”).

2. Select the ladder parts to be deleted in the “ladder editing” display.

Left-click on the matrix location where the ladder parts are to be deleted in the “ladder editing” display.

8.5 Connecting and Disconnecting Lines between Ladder Parts

Ladder parts on a certain matrix are connected to ladder parts on another matrix with a line. The connection method of the line determines the ladder process. The following paragraph describes how to connect and disconnect the line between ladder parts.

8.5.1 Connecting with a Line

Connect ladder parts with a line in the following manner.

[How to Operate]

1. Left-click the mouse on the first ladder part.
2. While pressing the mouse, drag the mouse to the second ladder part.
3. Release the left button at the second ladder part.

Two parts are connected by a drag and drop operation.

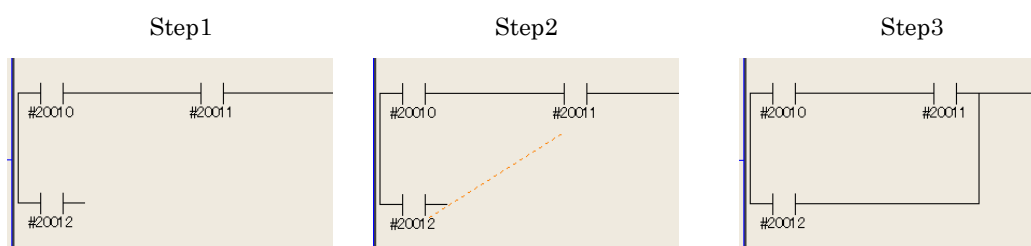


Fig. 8-3 Line Connection Process

■ Ladder Parts Connection Terminals

Ladder parts have IN and OUT terminals. A connecting line connects the IN and OUT terminals. A drop and drag operation determines which are IN and which are OUT terminals and connects them automatically.

However, when two connection ladder parts are placed vertically as shown in Fig. 8-4, the user must decide to connect the IN or OUT side.

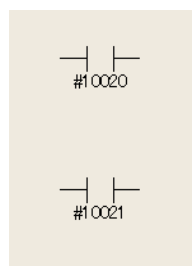


Fig. 8-4 When Parts are Placed Vertically

In Fig. 8-5, the mouse pointer is dragged from the center of a ladder part and dropped on the IN side of the other part, to make the connecting line on the IN side.

Dropping on the IN side makes a line which connects to the IN side of the other ladder part. On the other hand, dropping on the OUT side makes a line which connects to the other OUT side.

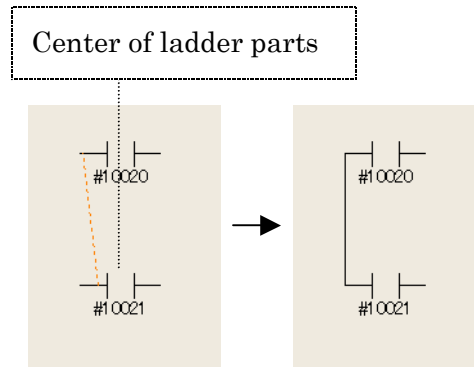


Fig. 8-5 Connection on IN Side

8.5.2 Disconnecting Two Parts

Erase the line between ladder parts to disconnect them in the following manner.

[How to Operate]

1. Right-click the mouse on the first ladder part.
2. While pressing the mouse, drag the mouse to the second ladder part.
3. Release the **right button** at the second ladder part.

Two parts are disconnected by a right-click, drag and drop operation.

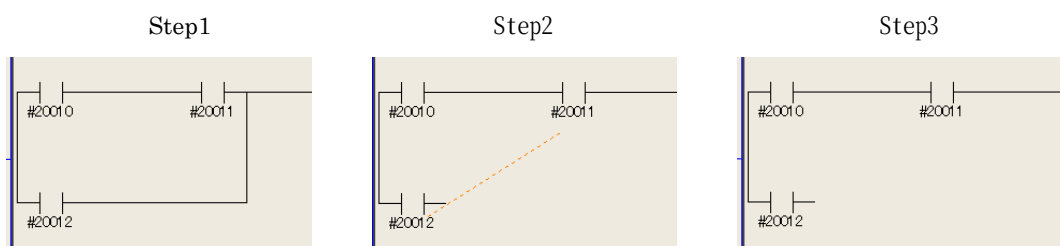


Fig. 8-6 Disconnection Process

8.6 Setting Relay No., Register No. and Constants

Relay No., register No. and constants can be set for each ladder parts. Set these values in the following manner.

[How to Operate]

1. Enter the set value input mode.

Select [Tool] – [Edit Instruction] – [Edit Instruction Parameters.], or select  from the parts control tool bar (refer to “26.2.2 Parts Control Tool Bar”).

2. Select the ladder parts to which the set values are input in the “ladder editing” display.

Left-click the mouse on the ladder parts in the “ladder editing” display, and the “set value input” dialog box appears.

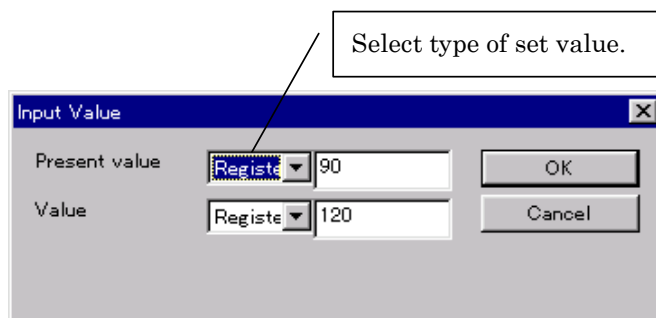


Fig. 8-7 [Input Value] Dialog Box

Note: The number of setting items in the [Input Value] dialog box differs depending on the ladder parts.

3. Input the set values.

Select the type of the set value in the combo box of the [Input Value] dialog box, and then input a value suitable for the type of the set value.

Click the [OK] button to set the values.

8.6.1 Setting Values Using a Pop-up Menu

Set values can also be set in the following manner using a pop-up menu. The pop-up menu appears by right-clicking the mouse.

[How to Operate]

1. Right-click the mouse on the ladder parts to which the set values are input, and select the pop-up menu.

Right-click the mouse on the ladder parts to which the set values are input in the “ladder editing” display, and the pop-up menu appears. Select the [Edit Instruction Parameters], and the [Input Value] dialog box appears.

2. Input the set values.

Input the set values in the [Input Value] dialog box.

8.7 Inputting Relay No. and Register No. Names

Names can be set for the relay Nos. and register Nos.. When editing name, a new name can be input or name information read from the external name file can be edited. Set the name for a relay No. or a register No. in the following manner.

[How to Operate]

1. Enter the name input mode.

Select [Tool] – [Edit Instruction] – [Edit Labels and Comments], or select  from the parts control tool bar (refer to “26.2.2 Parts Control Tool Bar”).

2. Select the ladder parts where the number of the name to be selected is set.

Left-click the mouse on the ladder parts where the number of the name to be selected is set in the “ladder editing” display, and the [Edit Labels and Comments] dialog box appears.

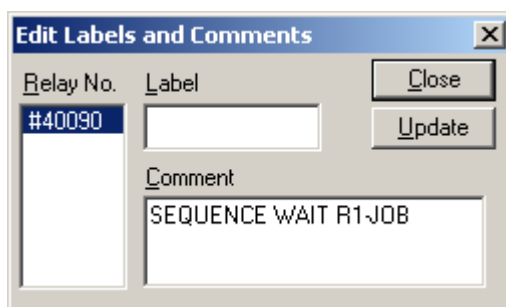


Fig. 8-8 [Edit Labels and Comments] Dialog Box

The relay No. or register No. appears in the No. selection list box as shown below.

Relay No. : #xxxxx, W#xxxxx

Register No. : Mxxx

Note: Some ladder parts have several relay Nos. or register Nos. In such a case, several numbers appear in the No. selection list box.

Verify that the targeted relay Nos. or register Nos. appear and are selected in the relay No. selection list box.

3. Set the name.

Two types of names, a short name and a long name can be used. They are treated as follows with Ladder Editor 32NX.

- | | |
|------------|--|
| Short name | : Appears overlapped on the relay No. or register No. of the ladder diagram in the “ladder editing” display. (Refer to “23.8 Switching Short Name Display/Non-Display”.) |
| Long name | : Appears in the column of OUT relay names in the “ladder editing” display, and in the row of output signal names in the “ladder preview” display. |

When setting is completed, be sure to click the [Update] button. This button records the setting information.

8.7.1 Setting Names Using a Pop-up Menu

Names can be also set in the following manner using the pop-up menu.

[How to Operate]

1. Select the ladder parts where the relay No. or register No. of the name to be edited is set.

Right-click the mouse on the ladder parts where the relay No. or register No. of the name to be edited is set in the “ladder editing” display, and the pop-up menu appears. Select the [Edit Labels and Comments], the [Edit Labels and Comments] dialog box appears.

2. Edit the name.

Edit the displayed name for a relay No. or register No. in the [Edit Labels and Comments] dialog box.

8.8 Inserting Editing Matrix Row and Line

Even though new ladder parts are to be inserted immediately before the ladder parts that have already been set, there may be no matrix for insertion as shown in the following diagram (Fig. 8-9).

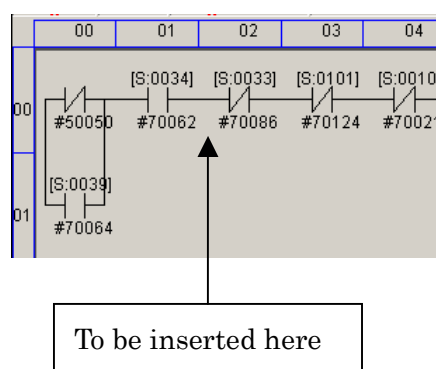


Fig. 8-9 When No Space for Matrix

In this case, insert a line (or a row) to secure the matrix where the ladder parts are to be inserted.

8.8.1 Inserting a Row

Insert a row in the following manner.

[How to Operate]

1. Enter the row insertion mode.

Select [Tool] – [Edit Instructions] – [Edit Entire Row] – [Insert Row].

Or select  from the parts control tool bar (refer to “26.2.2 Parts Control Tool Bar”).

2. Specify the matrix where a row is to be inserted.

Left-click the mouse on the matrix where a row is to be inserted.

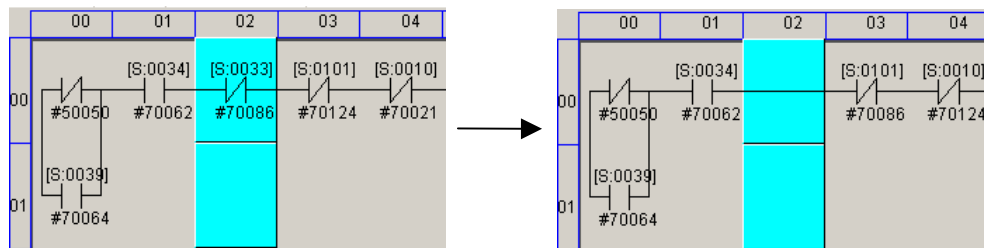


Fig. 8-10 Result of Row Insertion

■ Row Insertion Disabled Pattern

A row cannot be inserted if even one part exists in the column just before the last column on the right after the second line of the matrix in the “ladder editing” display.

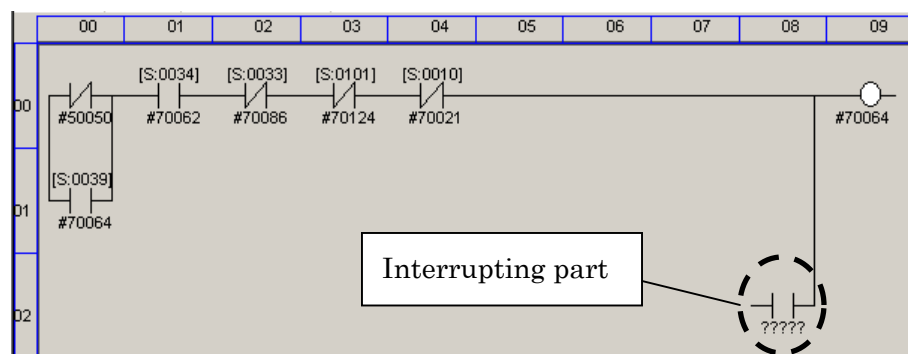


Fig. 8-11 Disabled Row Insertion

8.8.2 Inserting a Line

Insert a line in the following manner.

[How to Operate]

1. Enter the line insertion mode.

Select [Tool] – [Edit Instructions] – [Edit Entire Column] – [Insert Column]. Or select  from the parts control tool bar (“26.2.2 Parts Control Tool Bar”).

2. Specify the matrix where a line is to be inserted.

Left-click the mouse on the matrix where a line is to be inserted.

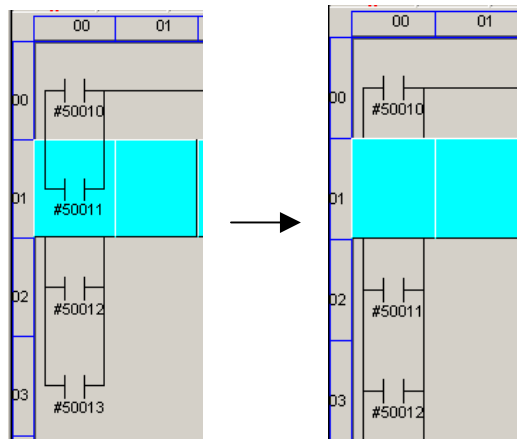


Fig. 8-12 Result of Line Insertion

■ Line Insertion Disabled Pattern

A line cannot be inserted if even one part exists in the lowest line of the matrix in the “ladder editing” display.

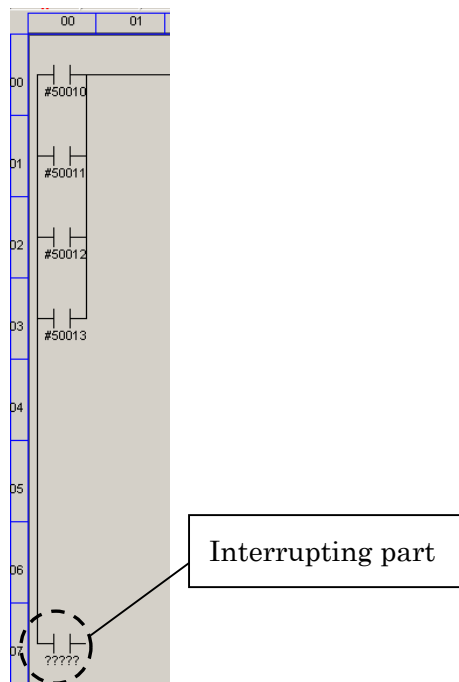


Fig. 8-13 Disabled Line Insertion

8.9 Deleting Editing Matrix Row and Line

Unnecessary rows or lines can be deleted.

8.9.1 Deleting a Row

Delete a row in the following manner.

[How to Operate]

1. Enter the row deletion mode.

Select [Tool] – [Edit Instructions] – [Edit Entire Row] – [Delete Row].

Or select  from the parts control tool bar (refer to “26.2.2 Parts Control Tool Bar”).

2. Specify the matrix where a row is to be deleted.

Left-click the mouse on the matrix where a row is to be deleted.

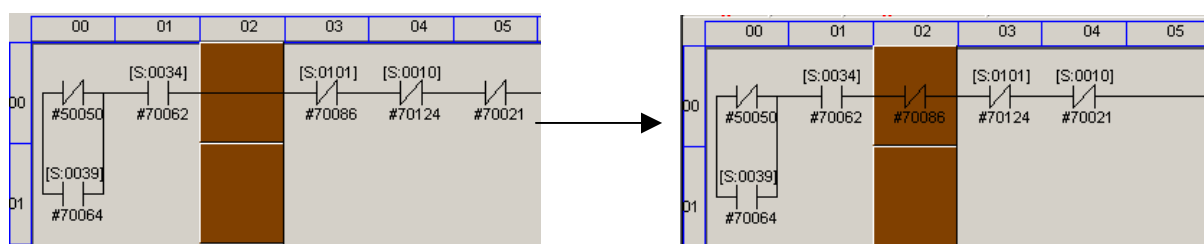


Fig. 8-14 Result of Row Deletion

Note: Deletion of a row deletes all the ladder parts that are set to the row to be deleted.

8.9.2 Deleting a Line

Delete a line in the following manner.

[How to Operate]

1. Enter the line deletion mode.

Select [Tool] – [Edit Instructions] – [Edit Entire Column] – [Delete column].

Or select  from the parts control tool bar (refer to “26.2.2 Parts Control Tool Bar”).

2. Specify the matrix where a line is to be deleted.

Left-click the mouse on the matrix where a line is to be deleted.

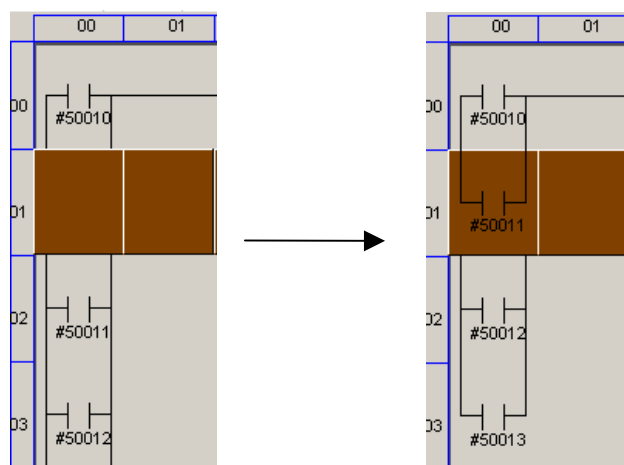


Fig. 8-15 Result of Line Deletion

Note: Deletion of a line deletes all the ladder parts set to the line to be deleted.

8.10 Clearing Displays

The contents of the “ladder editing” display can be cleared when editing. This function is useful when the current display is to be reedited from the beginning.

[How to Operate]

Select [Edit] – [Clear Current Rung]. Or select  from the parts control tool bar (refer to “26.2.2 Parts Control Tool Bar”).

9 INSERTING A NEW LINE

A new line is inserted into an arbitrary line. Since default values are set to the new line, change the values to the correct ladder information.

The new line is inserted into the next line of the line selected in the ladder preview display.

[How to Operate]

Select [Edit] – [Insert new Rung], or select  from the main tool bar (refer to “26.2.1 Main Tool Bar”).

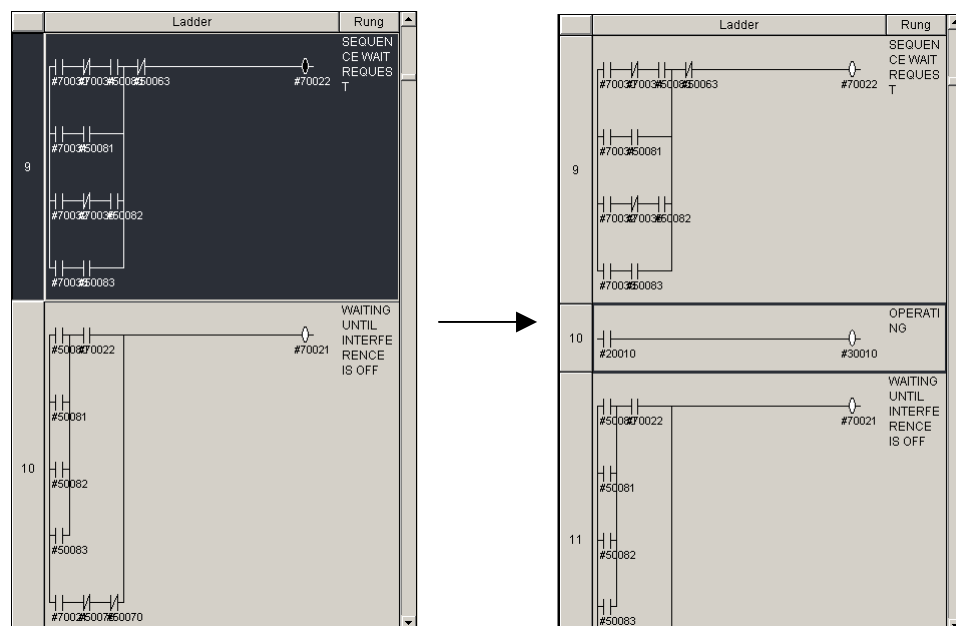


Fig. 9-1 Inserting New Line

10 LINE OPERATION OF LADDER DIAGRAM

Be sure to select [Overwrite] or [Insert] for the contents edited in the “ladder editing” display before editing another line. Without this operation, the contents edited immediately before will be deleted. Ladder Editor 32NX checks the ladder information that is being currently edited when another line appears. If the [Overwrite] or [Insert] is not selected, an editing confirmation message appears. (Refer to “23.7 Automatic Updating Function”.)

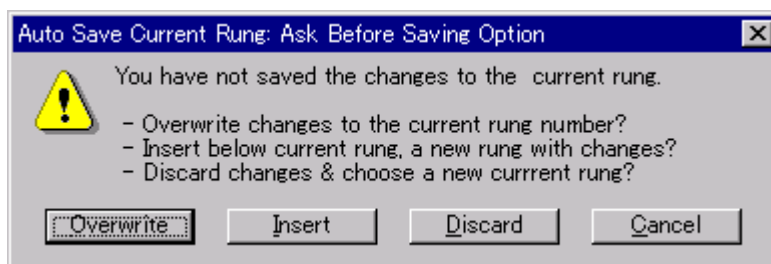


Fig. 10-1 [Auto Save Current Rung: Ask Before Saving Option] Dialog Box

Normally, the operator uses the menu or tool button to perform [Overwrite] or [Insert].

10.1 Changing an Edited Ladder Line

Overwrite the contents edited in the “ladder editing” display on the line currently being edited, in the following manner.

[How to Operate]

Select [Edit] – [Save Current Rung] – [Overwrite], or select  from the main tool bar (refer to “26.2.1 Main Tool Bar”).

10.2 Inserting an Edited Ladder Line

Insert the contents edited in the “ladder editing” display into the next line of the line currently being edited, in the following manner. Therefore, the ladder data after the inserting line will be shifted backward.

[How to Operate]

Select [Edit] – [Save Current Rung] – [Insert], or select  from the main tool bar (refer to “26.2.1 Main Tool Bar”).

11 CUTTING, COPYING AND PASTING LINES

11.1 Cutting a Ladder Diagram Line

Cut the line selected in the “ladder preview” display. The ladder information of the cut line can be pasted to another line by pressing [Paste Rung] or [Insert Cut/Copied Rung].

[How to Operate]

Select the line to be cut in the “ladder preview” display, and select [Edit] – [Cut Rung]. Or select  from the main tool bar (refer to “26.2.1 Main Tool Bar”).

To select several lines simultaneously, hold down the [SHIFT] or [CTRL] key when selecting lines.

11.2 Copy a Ladder Diagram Line

Copy the line selected in the “ladder preview” display. The ladder information of the copied line can be pasted onto another line by pressing [Paste Rung] or [Insert Cut/Copied Rung].

[How to Operate]

Select the line to be copied in the “ladder preview” display. Then select [Edit] – [Copy Rung] menu. Or select  from the main tool bar (refer to “26.2.1 Main Tool Bar”).

To select several lines simultaneously, hold down the [SHIFT] or [CTRL] key when selecting lines.

11.3 Pasting a Ladder Diagram Line

Paste the cut or copied contents of the line by pressing [Cut Rung] or [Copy Rung] over the line selected in the “ladder preview” display.

When several ladder list files are open simultaneously, the ladder diagram can be pasted onto another ladder list file.

[How to Operate]

Select the line to be pasted in the “ladder preview” display, and select [Edit] – [Paste Rung]. Or select  from the main tool bar (refer to “26.2.1 Main Tool Bar”).

Note: This function is disabled if several lines were cut or copied by pressing [Cut Rung] or [Copy Rung] in the operation immediately before. After selecting only one line and pressing [Cut Rung] or [Copy Rung], try pasting again.

11.4 Inserting and Pasting a Ladder Diagram Line

Insert the cut or copied contents of the line into the line selected in the “ladder preview” display. Therefore, the ladder data after the inserting/pasting line will be shifted backward.

When several ladder list files are open simultaneously, the ladder diagram can be inserted and pasted onto another ladder list file.

[How to Operate]

Select the line to be inserted and pasted in the “ladder preview” display. Then select [Edit] – [Insert Cut/Copied Rung]. Or select  from the main tool bar (refer to “26.2.1 Main Tool Bar”).

12 COMPILING EDITED CONTENTS

Be sure to compile the ladder information of each line after editing.

Compiling performs final checking such as the relay No. overlapping check, etc. to load the information to the controller.

Notes 1: Without this operation, the edited data cannot be correctly stored.

Notes 2: Since compiling processes the system section and the user section of the ladder program, it is unnecessary to change to a system ladder or a user ladder.

[How to Operate]

Select [Tools] – [Check the Ladder], or select  from the main tool bar (refer to “26.2.1 Main Tool Bar”).

13 PRINTING

13.1 Printing a Ladder Diagram

Print an image of a ladder diagram. For the ladder program to be printed, the line Nos. of other lines referring to the OUT terminal relay Nos. appear. The information of the reference lines appears as the system section and user section together.

[How to Operate]

Select [File] – [Print] – [Ladder Diagram] – [System Section (or User Section)].

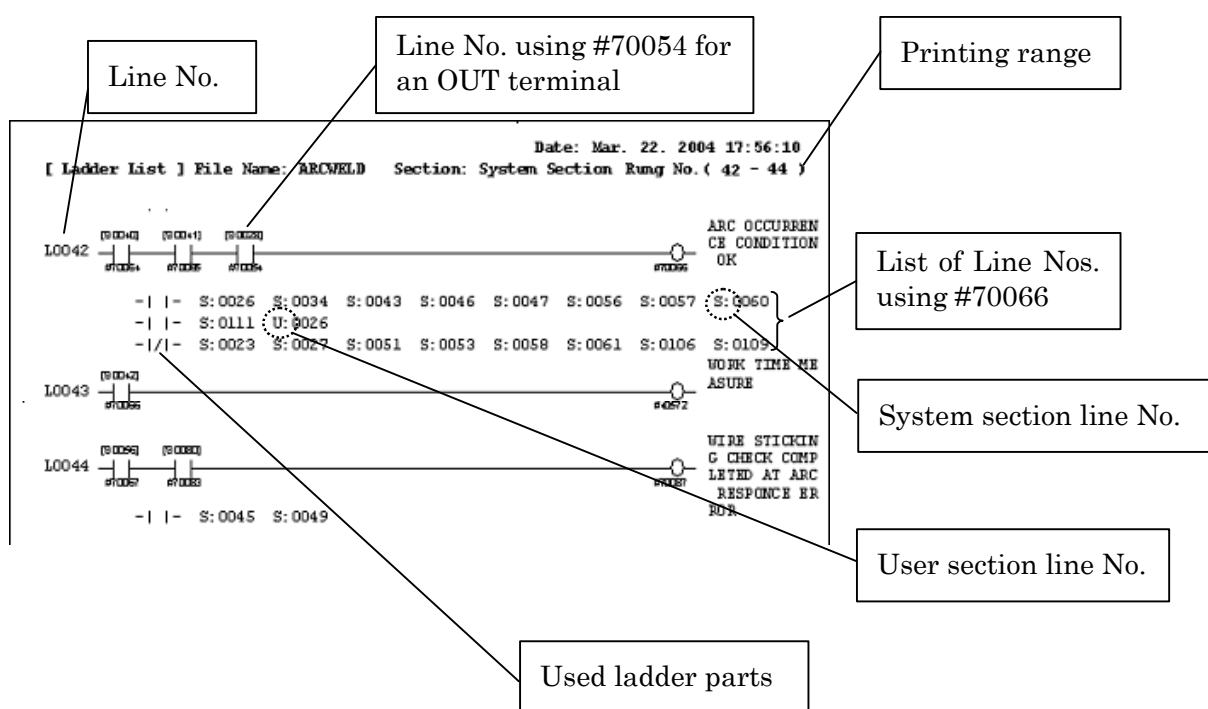


Fig. 13-1 Ladder Image Printing

13.2 Printing Relay No. Using List

Print the list of used relay Nos. and the line Nos. referring to each relay No. in a list. List information of the reference lines appears as the system section and user section together.

[How to Operate]

Select [File] – [Print] – [Relay List] – [System Section (or User Section)].

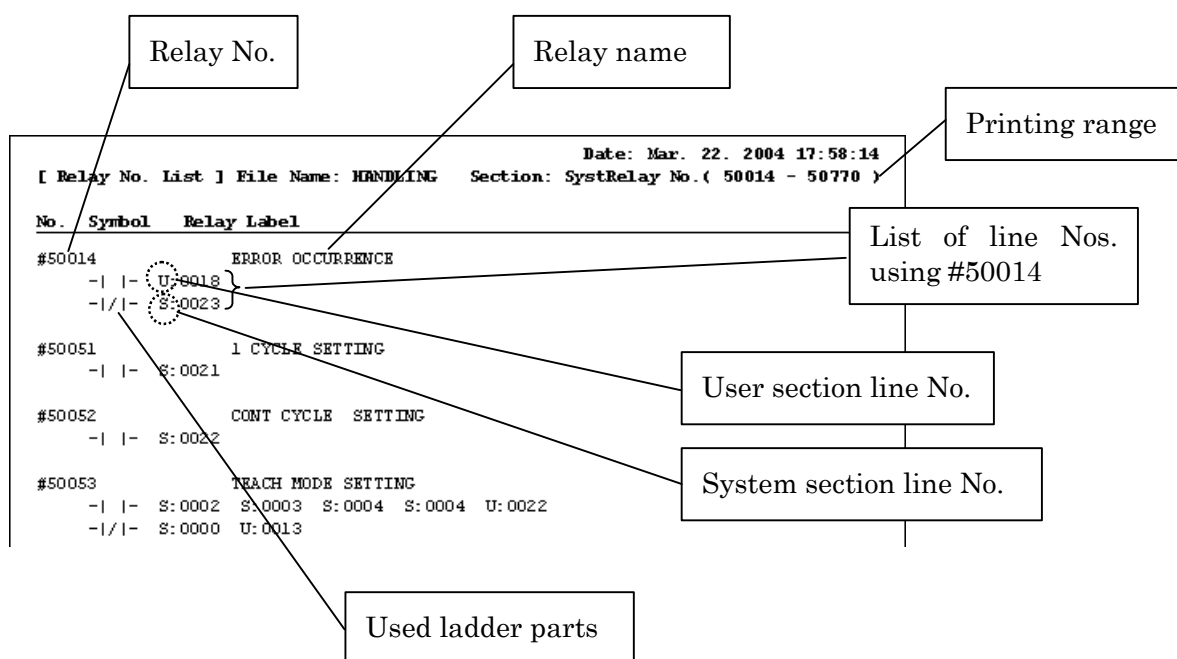


Fig. 13-2 Printing Relay No. List

13.3 Printing Register No. Using List

Print the list of used register Nos. and line Nos. referring to each register No. in a list. List information of the reference lines appears as the system section and user section together.

[How to Operate]

Select [File] – [Print] – [Register List] – [System Section (or User Section)].

The screenshot shows a window titled '[Register No. List]' with a header bar containing 'Date: Mar. 22. 2004 17:59:35' and 'FileName: ARCWELD Section: System Register No. (210 - 464)'. Below the header is a table with columns 'No.', 'Symbol', and 'Register Label'. The table lists registers M210 through M250. Callouts point to various parts: 'Register No.' points to the 'No.' column; 'Printing range' points to the header bar; 'List of line Nos. using M211' points to the 'Symbol' column for M211; 'System section line No.' points to the 'Register Label' for M211; and 'Used ladder parts' points to the 'Register Label' for M211.

No.	Symbol	Register Label
M210	TMR	S:0107
M211	TMR	S:0108
M212	TMR	S:0109
M213	TMR	S:0031
M214	TMR	S:0030
M219		SYSTEM RESERVED
	CNT	S:0021
M250		ARC RESPONSE ERROR (CURRENT)
	TMR	S:0056

Fig. 13-3 Printing Register No. List

13.4 Printing Relay No. Use State

Print the relay No. use state in the “matrix” display.

[How to Operate]

Select [File] – [Print] – [Relay State Table].

Relay Nos. for the system section and user section appear together, indicated by the following symbols.

S: Relay Nos. used in a system section

U: Relay Nos. used in a user section

B: Relay Nos. used in both system and user sections

A relay No. in a matrix is regarded as YYYYYYX when the vertical is “YYYYYY” and the horizontal axis value is “X”.

Relay No. matrix

Used in both user and
system section

Printing range

Om. Relay No. Use state list] Name: ARCWELD

Date: Mar. 22. 2004 21:34:

Relay No. (40000 - 40999

7 6 5 4 3 2 1 0			7 6 5 4 3 2 1 0			7 6 5 4 3 2 1 0		
40000	...	B	40100	...	S	40200	...	S
40010	...	S	40110	...	S	40210	...	S
40020	...	S	40120	...	S	40220	...	S
40030	...	S	40130	...	S	40230	...	S
40040	...	U	40140	...	S	40240	...	S
40050	...	B	40150	...	S	40250	...	S
40060	...	S	40160	...	S	40260	...	S
40070	...	S	40170	...	S	40270	...	S
40080	...	S	40180	...	S	40280	...	S
40090	...	S	40190	...	S	40290	...	S

Used in a system
section

Used in a user
section

7 6 5 4 3 2 1 0			7 6 5 4 3 2 1 0			7 6 5 4 3 2 1 0		
40300	...	S	40400	...	S	40500	...	S
40310	...	S	40410	...	S	40510	...	S
40320	...	S	40420	...	S	40520	...	S
40330	...	S	40430	...	S	40530	...	S
40340	...	S	40440	...	S	40540	...	S
40350	...	S	40450	...	S	40550	...	S
40360	...	S	40460	...	S	40560	...	S
40370	...	S	40470	...	S	40570	...	S
40380	...	S	40480	...	S	40580	...	S
40390	...	S	40490	...	S	40590	...	S

7 6 5 4 3 2 1 0			7 6 5 4 3 2 1 0			7 6 5 4 3 2 1 0		
40600	...	U	40700	...	S	40800	...	S
40610	...	S	40710	...	S	40810	...	S
40620	...	S	40720	...	S	40820	...	S
40630	...	S	40730	...	S	40830	...	S

Fig. 13-4 Printing Relay No. Use State

13.5 Printing User Alarms and User Messages

Print the lists of user alarms and user messages.

[How to Operate]

Select [File] – [Print] – [Alarms and Messages].

Date: Mar. 22, 2004 18:10:08

[User Alarm & User Message Information] Name: ARCWELD

[User Alarm (System Section)]		First language	Second language
No. Alarm Label (1st Language)	No. Alarm Label (2nd Language)		
1	1		
2 MISSING ARC START CONFIRM	2		
3 ARC FAILURE	3		
4	4		
5 GAS FAILURE (RESTART)	5		
6 WIRE FAILURE (RESTART)	6		
7	7		
8	8		
9 WELDER MUFUNCTIOIN	9		
10	10		
11	11		
12	12		
13	13		
14	14		
15	15		
16	16		

[Type Selection Signal Relay No.]

Relay No.	Rung No.	Ladder Section
40130	63	System Section
40131	64	System Section
40132	65	System Section
40133	66	System Section
40134	----	
40135	----	

[Request Signal Relay No.]

Relay No.	Rung No.	Ladder Section
40010	67	System Section

[User Alarm (User Section)]

No. Alarm Label (1st Language)	No. Alarm Label (2nd Language)
65	65
66	66
67	67
68	68
69	69
70	70
71	71
72	72
73	73
74	74
75	75
76	76
77	77
78	78
79	79
80	80

[Type Selection Signal Relay No.]

Relay No.	Rung No.	Ladder Section
40140	----	
40141	----	
40142	----	
40143	----	
40144	----	
40145	----	

[Request Signal Relay No.]

Relay No.	Rung No.	Ladder Section
40012	----	

Fig. 13-5 Printing User Alarm List

Date: Mar. 22. 2004 18:12:15

[User Alarm & User Message Information] Name: ARCWELD

[User Message (System Section)]

No. Message (1st Language)	No. Message (2nd Language)
1	1
2 WIRE STICKING/SHORT	2
3 GAS FAILURE	3
4 WIRE FAILURE	4
5 RESTARTING FOR ARC	5
6 RESTARTING FOR GAS	6
7 RESTARTING FOR WIRE	7
8 END OF ARC RESTARTING	8
9 ARC CONFIRM RELAY STICKING	9
10	10
11	11
12	12
13	13
14	14
15	15
16	16

[Type Selection Signal Relay No.]

Relay No.	Rung No.	Ladder Section
40150	69	System Section
40151	70	System Section
40152	71	System Section
40153	72	System Section
40154	----	
40155	----	

[Request Signal Relay No.]

Relay No.	Rung No.	Ladder Section
40011	73	System Section

[User Message (User Section)]

No. Message (1st Language)	No. Message (2nd Language)
65	65
66	66
67	67
68	68
69	69
70	70
71	71
72	72
73	73
74	74
75	75
76	76
77	77
78	78
79	79
80	80

[Type Selection Signal Relay No.]

Relay No.	Rung No.	Ladder Section
40160	----	
40161	----	
40162	----	
40163	----	
40164	----	
40165	----	

[Request Signal Relay No.]

Relay No.	Rung No.	Ladder Section
40013	----	

Fig. 13-6 Printing User Message List

The following describes the items of printed information. User alarms and user messages can be printed. Since each display item is the same, this paragraph describes printing of the user alarm list as an example.

13.5.1 User Alarm System Section and User Section

A user alarm can be roughly classified as a system section that the system uses or a user section that the user can define freely. When printing, this information appears as the following word.

[User Alarm(*** Section)]**

13.5.2 User Alarm Selection Relay No. Information

Relay No. information is displayed to help select a used user alarm. A user alarm is specified by turning the following six relays ON/OFF.

40130, 40131, 40132, 40133, 40134, 40135

When printing, this information appears as the following word.

[Type Selection Signal Relay No.]

When each relay No. is actually used in a code, the line No. appears.

13.5.3 User Alarm Display Relay No. Information

Relay No. information which becomes a trigger to help display a user alarm appears. The relay No. that becomes a display trigger is **40010**.

When printing, this information appears with the following word.

[Request Signal Relay No.]

When each relay No. is actually used in a code, the line No. appears.

14 TRANSFERRING PRINTING INFORMATION TO A TEXT FILE

14.1 Transferring Ladder Diagrams to a Text File

Transfers an image of a ladder diagram to a text file.

[How to Operate]

Select [File] – [Save As Text Files] – [Ladder Diagram] – [System Section (or User Section)].

14.2 Transferring Used Relay No. Lists to a Text File

Transfers the lists of relay Nos. used and the line Nos. referring to each relay No. to a text file. The system section and the user section are transferred together in the list of reference lines.

[How to Operate]

Select [File] – [Save As Text Files] – [Relay List] – [System Section (or User Section)].

14.3 Transferring Used Register No. Lists to a Text File

Transfers the lists of register Nos. used and the line Nos. referring to each register No. to a text file. The system section and the user section are transferred together in the list of reference lines.

[How to Operate]

Select [File] – [Save As Text Files] – [Register List] – [System Section (or User Section)].

14.4 Transferring Relay No. Use State to a Text File

Transfers the relay number use state to the text file in a "matrix" display.

[How to Operate]

Select [File] – [Save As Text Files] – [Relay State Table].

14.5 Transferring User Alarms and User Messages to a Text File

Transfers the user alarms and user messages to a text file.

[How to Operate]

Select [File] – [Save As Text Files] – [Alarms and Messages].

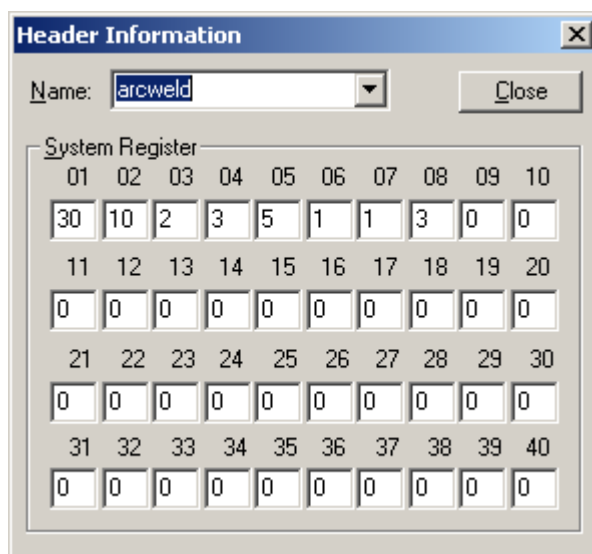
15 HEADER INFORMATION

15.1 Ladder Name and System Register Editing

Edit the ladder program names and system registers.

[How to Operate]

Select [Edit] – [Header Information], or select  from the main tool bar (refer to “26.2.1 Main Tool Bar”).



The dialog box titled "Header Information" contains a "Name:" label followed by a text box with "arcweld" and a dropdown arrow. To the right is a "Close" button. Below is a "System Register" section with a grid of 41 input boxes arranged in 5 rows and 10 columns. The first row contains values 30, 10, 2, 3, 5, 1, 1, 3, 0, 0. The remaining four rows contain zeros.

01	02	03	04	05	06	07	08	09	10
30	10	2	3	5	1	1	3	0	0
11	12	13	14	15	16	17	18	19	20
0	0	0	0	0	0	0	0	0	0
21	22	23	24	25	26	27	28	29	30
0	0	0	0	0	0	0	0	0	0
31	32	33	34	35	36	37	38	39	40
0	0	0	0	0	0	0	0	0	0

Fig. 15-1 [Header Information] Dialog Box

[Name] combo box

Selects a ladder name. Normally, select one from the list in the combo box. A name can be entered directly. **However, an improper name interrupts the loading to the controller.**

System registers

Sets the number of system registers.

16 USER ALARM AND USER MESSAGE INFORMATION

Edit the user alarms and user messages.

[How to Operate]

Select [Edit] – [Alarms and Messages], or select  from the main tool bar (refer to “26.2.1 Main Tool Bar”).

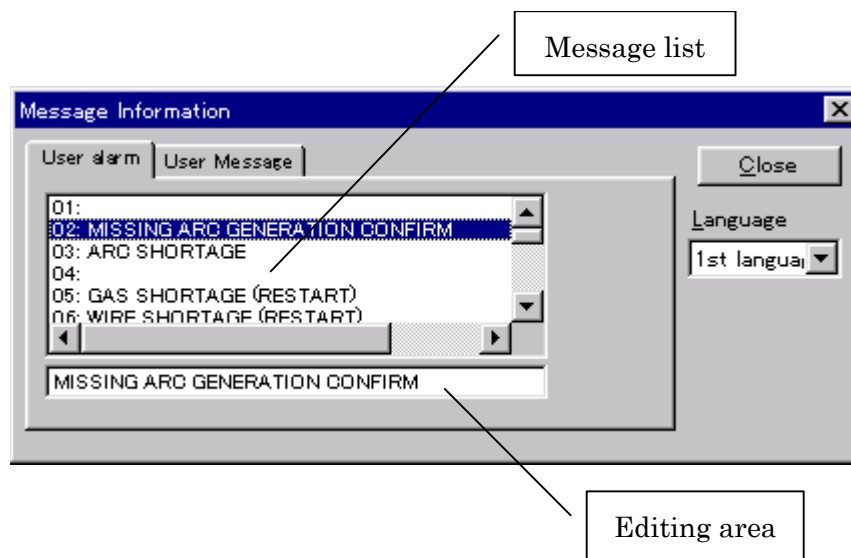


Fig. 16-1 [Message Information] Dialog Box

Click the tag to select the user alarm and user message.

Language combo box

Each message has a first and a second languages. Select your desired language from the language combo box.

Editing area

Click the message to be edited in the message list, and the same message appears in the editing area. Edit the message in this area. When editing is completed, press the [Change] button.

16.1 User Alarm and User Message in System Section

If the user account level does not reach the management level, only the information in the user section appears in the message list. To display or edit the information in the system section, change the user account level. (Refer to “25 USER INFORMATION MANAGEMENT”.)

17 SYSTEM LADDERS AND USER LADDERS

A ladder program has a system ladder in the system section and a user ladder in the user section. Because the manipulator may not move properly unless the system section is correctly edited, general users cannot edit the system section as well as the XRC. General users can edit only in the user ladder section. (Contact your Yaskawa representative when editing in the system section of the ladder program is required.)

18 NAME FILE

18.1 What is a Name File?

Name file is a name information file to add a name to a relay No. or register No. used in the ladder program. (For the format of the name file, refer to “26.3 Name File Format”.)

18.2 Reading Name File

Name file is read in at either one of the following cases.

- ① When a ladder program file or CMOS file is open
- ② When a name file is read in from the menu

When a ladder program file or CMOS file is open, the name file is read in at the same time as the ladder program file or CMOS file. When a name file is read in from the menu, any existing name file can be read in whenever necessary.

The name file is saved in the same folder as the ladder program file or the CMOS file. (Even if a name file has not been prepared, the ladder program can still be edited. Refer to " 18.2.1 Reading Name File Automatically (With Name File) ".)

18.2.1 Reading Name File Automatically (With Name File)

When reading in a ladder program file or a CMOS file, Ladder Editor 32NX automatically reads in the name file, too. The name file read in is determined by the ladder name of the ladder program used as a keyword (refer to “15.1 Ladder Name and System Register Editing”).

Example)

Ladder program name	: ARCWELD
Read in file name	: ARCWELD.NAM

18.2.2 Reading Name File Automatically (Without Name File)

If the desired name file is not available when automatically reading the name file, Ladder Editor 32NX performs the operation in the following manner.

1. Selects a file suitable for the desired ladder program from the name template file prepared in default.
2. Copies the selected template file to the same directory as the ladder program file.
3. Reads in the copied template file as a name file.

In this case, Ladder Edit 32NX refers to the ladder names to be read in to select the template file.

However, when the user changes the ladder name of the ladder program file, Ladder Editor 32NX may not find any file name that coincides with the ladder name template file. In such a case, the [Select name template] dialog box (Fig. 18-1) appears.

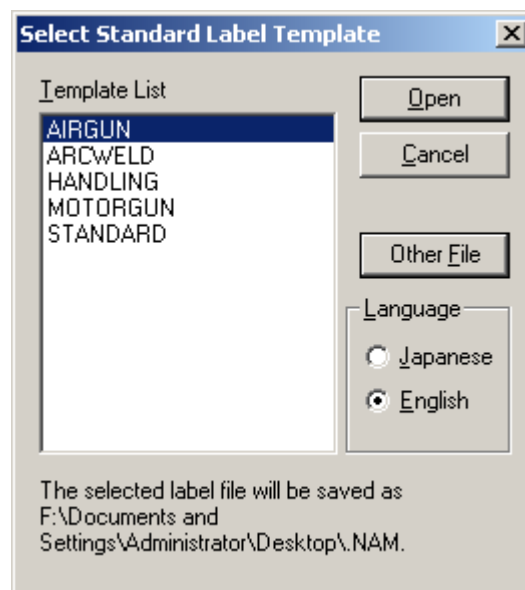
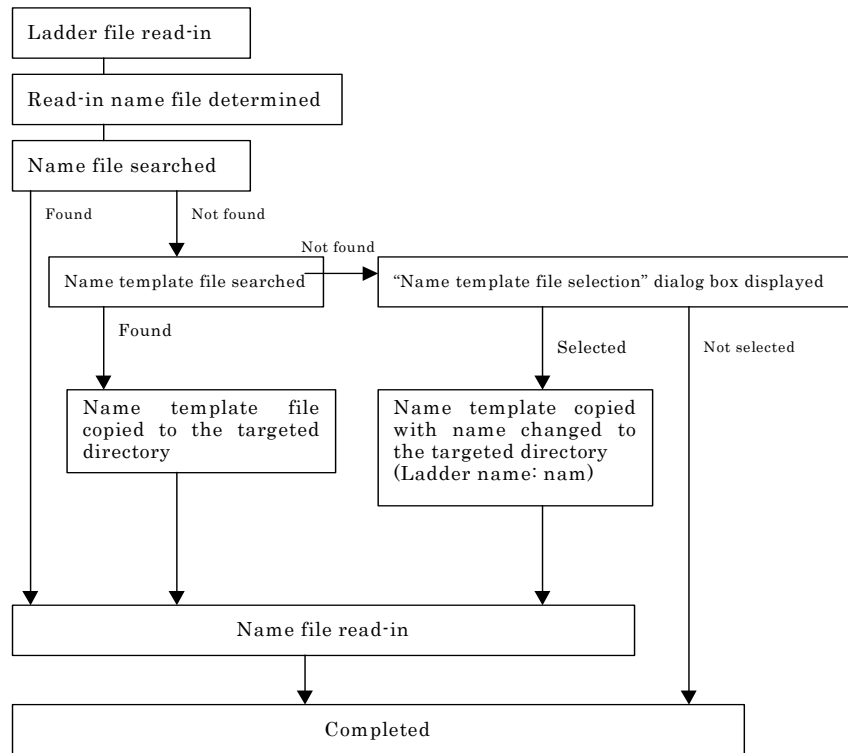


Fig. 18-1 [Select Name Template] Dialog Box

Select the template suitable for the desired ladder program. Clicking the [Cancel] button stops the automatic reading of the name file.

The following shows the simple flowchart of the automatic reading.



18.3 Storing Name File

Store the edited name information by one of the following two methods.

① Stores it manually.

[How to Operate 1]

1. Select [File] – [Save Relay Label Files]. When the [Save As] dialog box appears, input an arbitrary name for the name file to store it. Normally, the file name is stored in the following format.

Ladder name. NAM

(Example)

ARCWELD. NAM

For the ladder names, refer to “15 HEADER INFORMATION”.

② Stores it automatically.

[How to Operate 2]

Setting the option stores the name file automatically. Refer to “23.3 Automatic Storing Function of Name File”.

18.4 Name Template File

Name template file is installed automatically when Ladder Editor 32NX is setup. The following folder is created in the folder where the Ladder Editor 32NX execution module exists, and the name template file is stored in this folder.

“ Template ”

19 RELAY/REGISTER NAME LIST DISPLAY FUNCTION

The relay name list display function and register name list display function can display the name list for all relay Nos. and register Nos.. All the data of the read-in name files can be cross referenced. This “list display” dialog box has the editing function. The name information of an arbitrary relay or register No. can be edited.

[How to Operate] (“Edit Relay Labels & Comments” Display)

Select [Edit] – [Relay Lagels and Rung Comments]. The [Edit Relay Labels & Comments] dialog box appears as in Fig. 19-1. (Some machines take time to display it.)

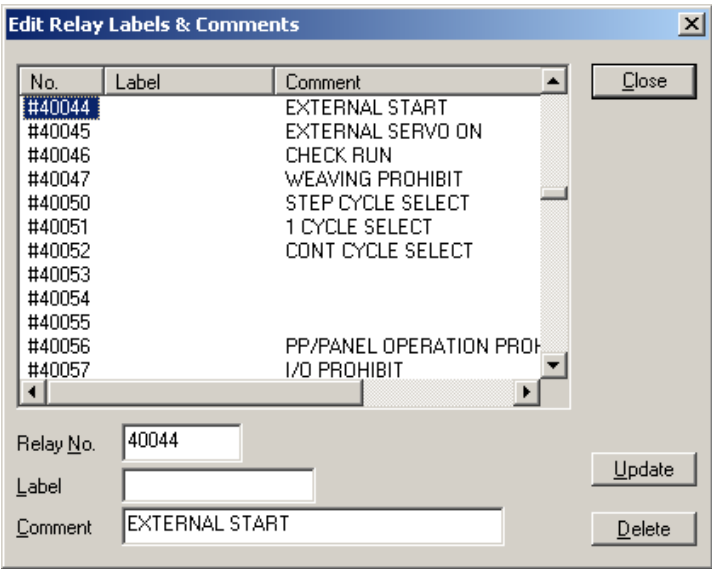


Fig. 19-1 [Edit Relay Labels & Comments] Dialog Box

By selecting any desired relay No. from the list, the currently set data appears in the [No.], [Label] and [Comment] columns. Edit the data here. After editing, click the [Update] button to register the edited data. If the [Label] and the [Comment] are similar for two or more relay Nos., change only the [No.], and then click the [Update] button. The name previously entered will remain. Because the names are similar, change only the characters that are different. The entire name does not have to be re-entered.

[How to Operate] (“Edit Register Labels & Comments” Display)

Select [Edit] – [Register Labels]. The [Edit Register Labels & Comments] dialog box appears as in Fig. 19-2. (Some machines take time to display it.)

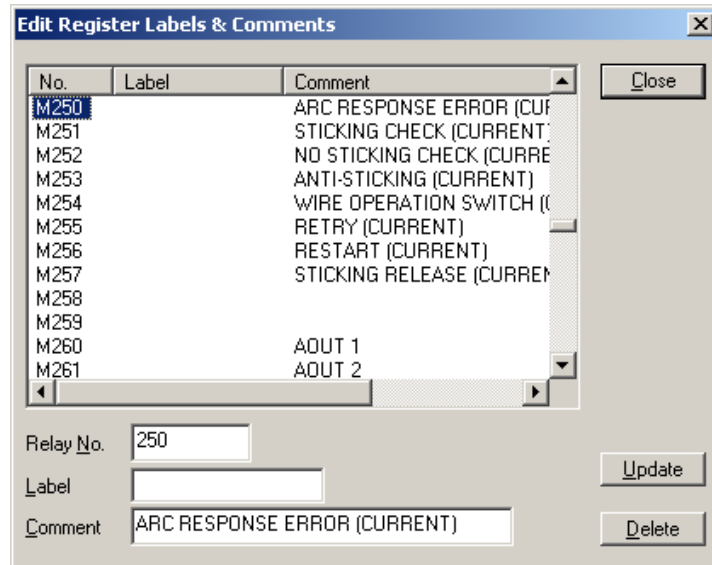


Fig. 19-2 [Edit Register Labels & Comments] Dialog Box

Editing procedure is the same as that of “Edit Relay Labels & Comments” Display.

Normally, edit a relay or register name by opening the [Edit Relay Labels & Comments] dialog box on the ladder diagram. However, relay Nos. or register Nos. not used for ladder diagrams cannot be less of edited. These lists can be used to edit the names for all the relay or register Nos. regardless whether or not they are used on the ladder diagram.

20 LINE JUMP FUNCTION

The line jump function searches for and jumps to the line with the keyword.

20.1 Line No. Search Jump

This function jumps to the specified line No..

[How to Operate]

1. Select [Edit] – [Go to Rung.], or select  (black) from the search jump tool bar (refer to “26.2.3 Search Jump Tool Bar”).

When the dialog box shown in Fig. 20-1 appears, enter the line No. to jump and click the [OK] button.

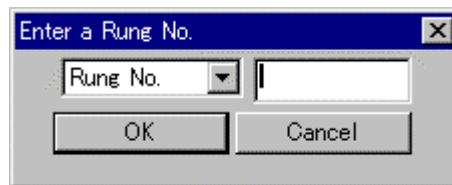


Fig. 20-1 “Enter a Rung No. ” Dialog Box

20.2 Parts Set Value Search Jump

This function searches for values such as relay Nos., register Nos., and constants set to the ladder parts, and then jumps to the line with the set values.

[How to Operate]

1. Select [Edit] – [Find Input Relays, Registers or Constants] – [Specify Parameter], or select  (brown) from the search jump tool bar (refer to “26.2.3 Search Jump Tool Bar”).
2. When the dialog shown in Fig. 20-2 appears, enter the type of the value and the set value to be searched and click the [OK] button.

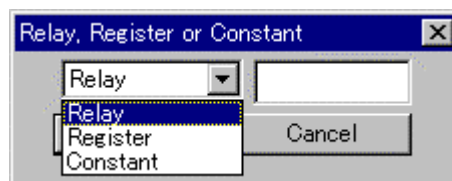


Fig. 20-2 “Relay, Register or Constant” Dialog Box

20.2.1 Previous/Next Search Jump

Previous search and next search functions can be used for searching for parts set values only.

[How to Operate]

For a backward search, select [Edit] – [Find Input Relays, Registers or Constants] – [Backward], or select  (brown) from the search jump tool bar (refer to “26.2.3 Search Jump Tool Bar”). For forward search, select [Edit] – [Find Input Relays, Registers or Constants] – [Forward], or select  (brown) from the search jump tool bar.

Backward

Backward search is a function to search for the set value in front of the current line (in the direction of smaller line No.).

Forward

Forward search is a function to search for the set value behind the current line (in the direction of greater line No.).

Unless new set values are entered by pressing [Edit] - [Find Input Relays, Registers or Constants]-[Backward search] or [Forward search], the set values to be searched for do not change.

This function can be used to easily know where and how the set values are used.

20.3 OUT Parts Relay No. Search Jump

The OUT parts relay No. search jump function searches only for the relay No. set to the OUT parts of the ladder parts and jumps there. Other ladder parts can not be searched for.

[How to Operate]

1. Select [Edit] – [Find Output Relays]. Or select  from the search jump tool bar (refer to “26.2.3 Search Jump Tool Bar”).
2. When the dialog box shown in Fig. 20-3 appears, input the relay No. to be searched for and click the [OK] button.



Fig. 20-3 “Input Relay No.” Dialog Box

This function can be used to analyze the conditions in which the relay used in the line turns ON retroactively.

20.4 History Jump

The history jump function stores the line jump functions used in the past as the history and easily returns to the previous jump source.

This function does not exist as a menu item; Only available as a tool bar button.

[How to Operate]

Select  or  from the search jump tool bar (refer to “26.2.3 Search Jump Tool Bar”).

Using this history jump button, you can freely move to the line registered in the jump history. Normally, this function is disabled. When jumps are performed, this function becomes enabled.

[Application]

An example of its most useful application is used together with “OUT parts relay No. search jump”. When searching for certain relay No. ON/OFF conditions using the “OUT parts relay No. search jump”, a search jump may also be performed in the further advanced lines for retroactive analyses. After completion of analysis, this history jump function can easily return to the previous line.

21 CROSS REFERENCE FUNCTION

21.1 Ladder Parts Set Value and Reference Line List Display Function

The ladder parts set value and reference line list display function displays on which line and for which ladder parts the specified set values are used.

[How to Operate]

1. Select [Tools] – [Instruction Use Table]. The dialog box shown in Fig. 21-1 appears.

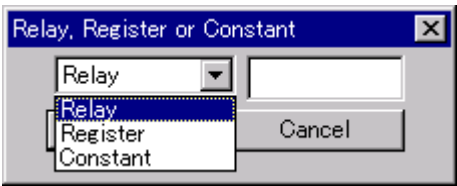


Fig. 21-1 [Relay, Register or Constant] Dialog Box

2. After inputting the targeted set value type and the value, click the [OK] button. The [Instruction Use Table] dialog box appears.

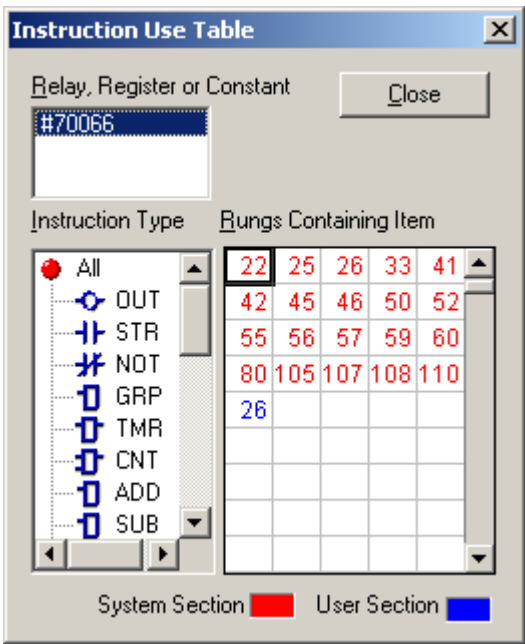


Fig. 21-2 [Instruction Use Table] Dialog Box

[Relay, Register or Constant] (Reference Data) List Box

The list contains the set values to be searched for. Normally, there is only one item. However, since more than two items may appear occasionally, select one.

[Instruction Type] Tree

The tree consists of ladder parts. Selecting this tree item can limit the line Nos. displayed in the [Rang Containing Item] matrix.

For example, selecting “STR” item displays only the line Nos. with the set values for “STR” parts.

[Rang Containing Item] Matrix

Displays the line Nos. referring to the set values selected in the [Relay, Register or Constant] (reference data) list box. The line No. appears in red if the detected line No. is within the system ladder area, and in blue if it is within the user ladder area.

[Application]

Set values in the ladder parts may be referenced by several other lines. In such cases, this function is useful to analyze where it is used or to know how it is used in other lines.

21.1.1 Line Jump from [Instruction Use Table] Dialog Box

The line jump from [Instruction Use Table] dialog box function can jump to an arbitrary line from the [Instruction Use Table] dialog box. As shown in Fig. 21-3, double-clicking the desired line No. on the [Rang Containing Item] matrix moves to the targeted line.

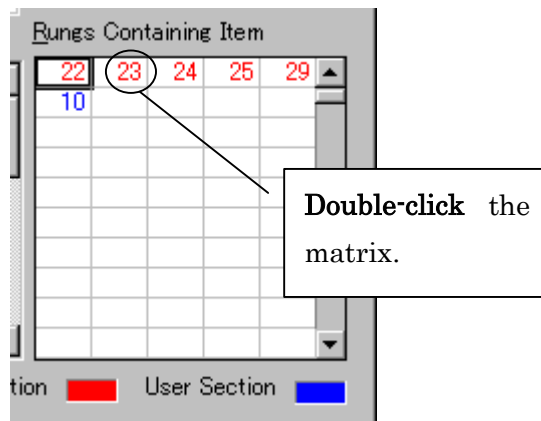


Fig. 21-3 Double-clicking Rungs Containing Item

Even if a line jump is performed by double-clicking, the [Instruction Use Table] dialog box does not disappear. Another jump to another line can be performed.

21.2 Function to Display the Relay No. Use Table and Register No. Use Table

This function displays which relay Nos. or register Nos. are used or not used in the ladder program that is being edited.

[How to Operate]

Select [Tools] – [Relay Use Table]. The dialog box shown in Fig. 21-4 appears.
 Select [Tools] - [Register Use Table]. The dialog box shown in Fig. 21-5 appears.

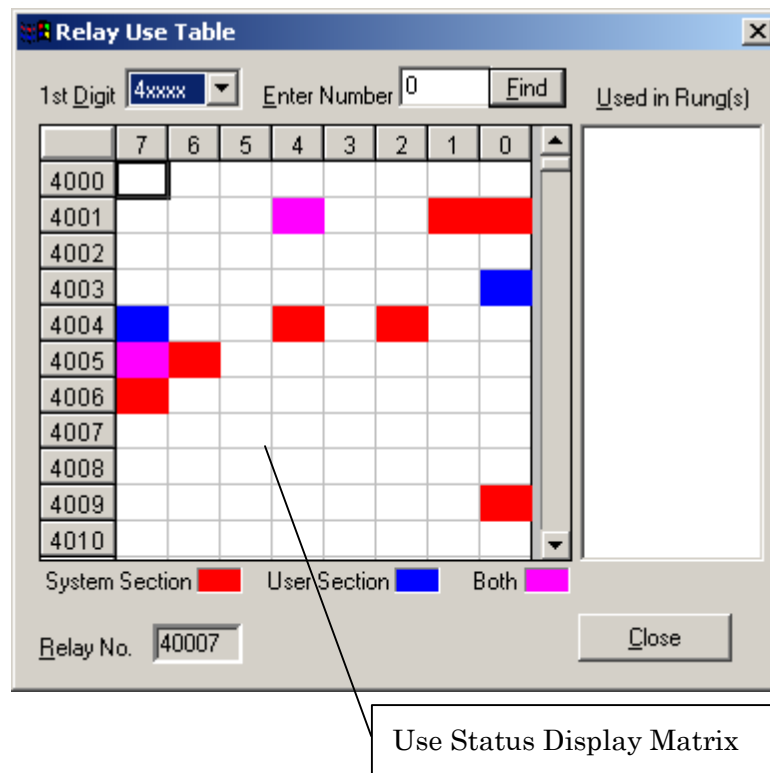


Fig. 21-4 [Relay Use Table] Dialog Box

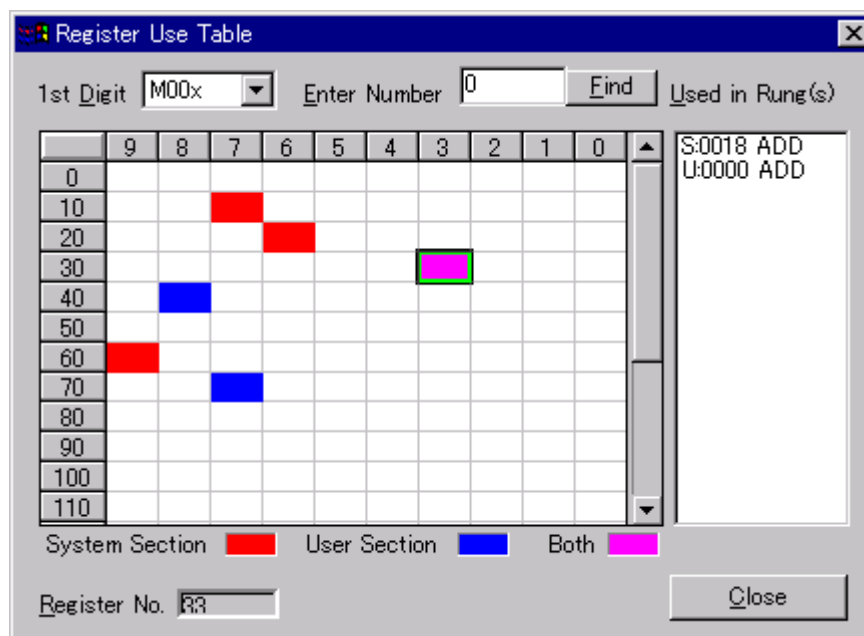


Fig. 21-5 [Register Use Table] Dialog Box

Use State Display Matrix

Relay Nos. (Register Nos.) used are displayed in the following colors:

- Red : Used in a system ladder.
- Blue : Used in a user ladder.
- Purple : Used in both system and user ladders.

In the matrix, the vertical axis displays the 10th or higher digits of the relay Nos. (Register Nos.) in units of 10, while the horizontal axis displays the 1st digit of the relay Nos.. Therefore, in the case of the use state display matrix in Fig. 21-4, the left top matrix is the relay No. 40007.

Clicking the colored matrix displays the list of used line Nos. in the [Use in Rang] list box.

[1St Digit] Combo box

The use state appears in the “Use Table matrix” in units of 10000. Select the unit in the [1St Digit] combo box.

[Enter Number] Input Box

Inputting the relay No. (Register Nos.) in this input box and clicking the [Find] button displays the specified relay No. in the matrix display.

[Use in Rang] List Box

In the [Use in Rang] list box, the line information referring to the relay No. (Register Nos.) selected in the “use state display matrix” appears in the format shown in Fig. 21-6.

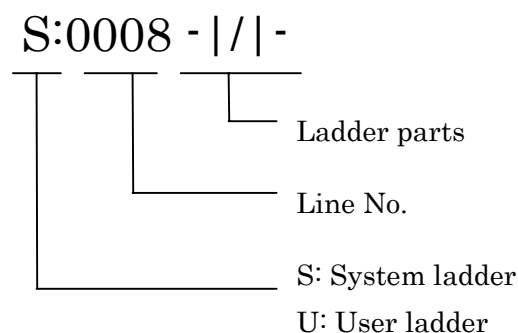


Fig. 21-6 Format of [Use in Rung] List Box

[Application]

When various relay Nos. are to be added or changed, this function is useful to use any unused relay Nos. (Register Nos.).

21.2.1 Line Jump from [Relay Use Table] Dialog Box

The line jump from [Relay Use Table] ([Register Use Table]) dialog box function can jump to an arbitrary line from the [Relay No. Use State] ([Register Use Table]) dialog box.

As shown in Fig. 21-7, double-clicking an item in the [Use in Rang] list box moves to the targeted line.

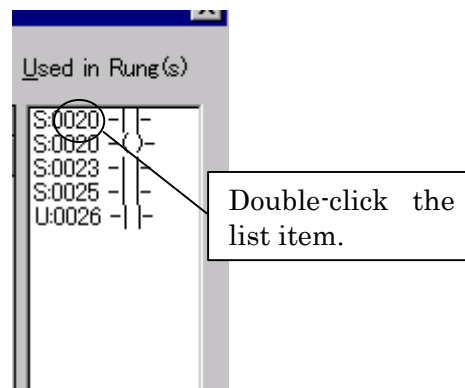


Fig. 21-7 Double-clicking Use Line List Item

Even if a line jump is performed by double-clicking an item, the [Relay Use Table] dialog box does not disappear. Another jump to another line can be performed.

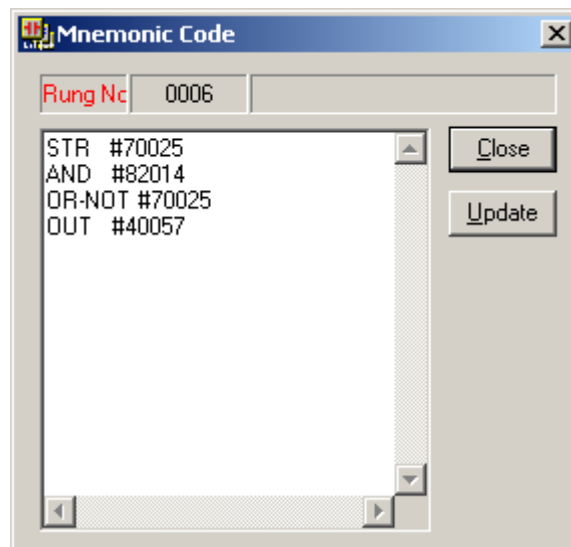
22 Mnemonic Display Function

Mnemonic display function allows displaying the ladder diagrams, which are selected in the “ladder preview” display, in mnemonic codes.

[How to Operate]

1. Select [Tools] – [Display Mnemonic].

The dialog box shown in Fig. 22-1 appears



22-1 Mnemonic Code Display

Note: The mnemonic code display does not show mnemonic codes which are being edited in the “ladder editing” display. It only shows the mnemonic codes of ladder diagrams which went through the process of [Edit] – [Save Current Rung] – [Overwrite] or [Edit] – [Save Current Rung] – [Insert].

22.1 Mnemonic Editing Function

If the following two conditions are fulfilled, mnemonic codes can be edited directly with the mnemonic code display as shown in Fig. 22-2 appears.

- Condition 1) Mnemonic codes (error codes) cannot be analyzed with Ladder Editor 32NX.
- Condition 2) The user account level is “Operator” and above.

Press [Update] when completing the editing.

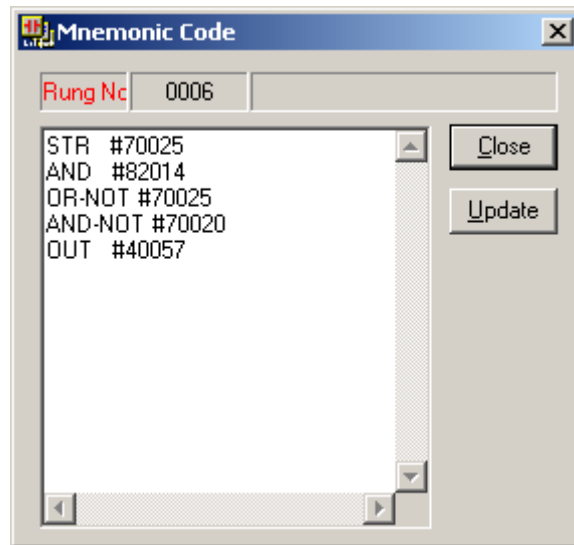


Fig. 22-2 Mnemonic Editing Display

Note: If the edited mnemonic codes are recognized as correct codes after pressing [Update], the display screen returns to the normal mnemonic code display shown in Fig. 22-1, and the mnemonic codes become unable to be edited directly. When editing the codes again, display the mnemonic editing display on the screen.

23 OTHER SETTINGS

23.1 Setting Color

Set the colors of the information displayed in the “ladder editing” display.

[How to Operate]

- 1. Select [Option] – [Color Schme]. The dialog box shown in Fig. 23-1 appears.

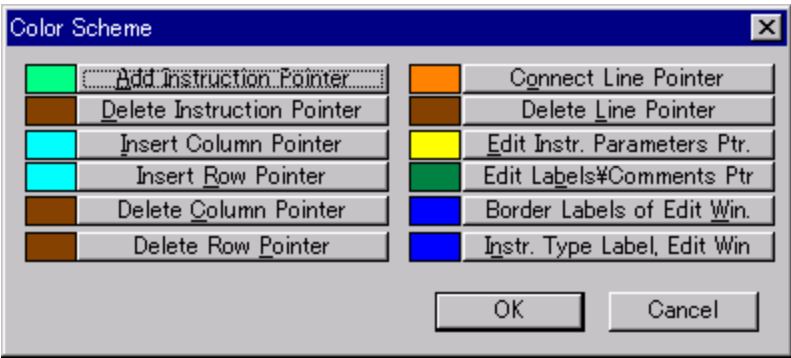


Fig. 23-1 [Color Schme] Dialog Box

- 2. Select each item. The dialog box shown in Fig. 23-2 appears. Select and set any desired color.



Fig. 23-2 [Color] Dialog Box

23.2 Setting Font

Set the character font in the “ladder editing” display. Fonts can be set individually for the editing display and the preview display.

[How to Operate]

1. Select [Option] – [Font] – [Edit Window], or [Option] – [Font] – [Preview Window]. The dialog box shown in Fig. 23-3 appears.

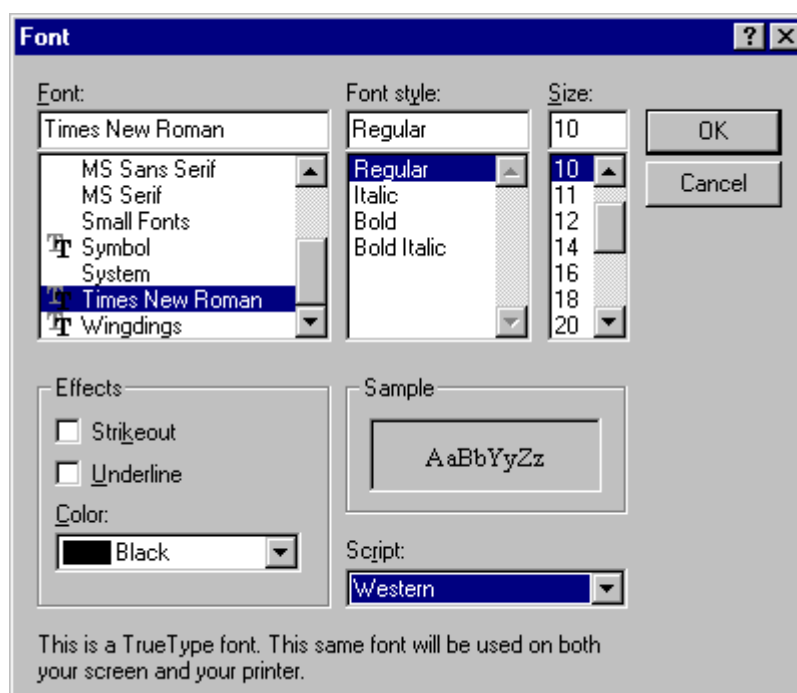


Fig. 23-3 [Font] Dialog Box

2. Select any desired font name, the font style and size. Then click the [OK] button.

23.3 Automatic Storing Function of Name File

Ladder Editor 32NX has a function to store the name information automatically. Validating this function updates the name files automatically when storing the ladder information.

[How to Operate]

Refer to “23.9 File Settings”.

If a relay name or register name is changed with this function invalid, an alarm message appears when the “ladder editing” display is closed. Store the data by selecting [File] – [Save Relay Label File].

23.4 Automatic Rough Draft File Storing Function

If any interference occurs at editing and the application shuts down before storing the editing data, Ladder Editor 32NX has a function to create a Rough Draft file (data file being edited) automatically.

[How to Operate]

Refer to “23.9 File Settings”.

With this function, the data in its current state is stored in a work file when a line is changed, inserted, or deleted in the “ladder editing” display. The stored file is saved with the following file name in the same folder as the ladder program file or CMOS file that is being edited.

Opened file name + “. TMP”

Notes 1: Even if a CMOS. HEX file is read in and edited, the work file is output as a ladder file (text file).

2: The data that is being edited in the “ladder editing” display is not stored.

23.5 Automatic Backup Function of the Read-in File (Original File)

When storing edited data, Ladder Editor 32NX has a function to automatically back up the files before editing.

[How to Operate]

Refer to “23.9 File Settings”.

The automatic backup function is available for the following files:

- Ladder files (*.LST)
- CMOS files (*.HEX)
- Name files (*.NAM)

A file name of one of these backup files has an “_” (under score) after each file extension in the same folder as the original files:

Relevant file name + extension + “_”

23.6 Rough Draft File Forced Output Function

Ladder Editor 32NX stores only the ladder programs in which compiling and grammatical checks, etc. are completed normally. However, the procedure may be interrupted temporarily during editing. To store a ladder program that cannot be compiled during editing, it can be forcibly stored as a rough draft file.

[How to Operate]

1. Select [File] – [Save As Rough Draft].
2. When the [Save File] dialog box appears, use an arbitrary file name to store it.

Note: Even if the reading source is a CMOS file, a work file can only output a text file as a ladder program file.

23.7 Automatic Updating Function

If an attempt to move to another line is made without selecting [Line Alt] or [Line Insert] when the data has been edited in the “ladder editing” display, one can select whether the [Verification] dialog box appears or the line is to be updated automatically.

For automatic updating, select either [Overwrite Current Rung] or [Insert New Rung].

[How to Operate]

① Displaying the [Verification] dialog box

Select [Option] – [Auto Save Current Rung] – [Ask Before Saving] to place checkmark in the box.

② Updating automatically

Select [Option] – [Auto Save Current Rung] – [Ask Before Saving] to remove the checkmark. When the checkmark is removed, select either [Option] – [Auto Save Current Rung] – [Overwrite Current Rung] or [Option] – [Auto Save Current Rung] – [Insert New Rung] .

23.8 Switching Short Name Display/Non-Display

Relay names and register names have information for short names. A short name can appear along with the relay No. or register No. corresponding to it in the “ladder editing” display.

[How to Operate]

Select [View] – [Relay Labels] to place checkmark in the box.

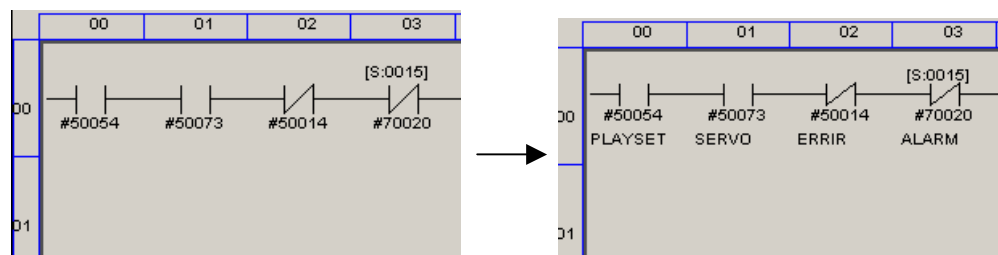


Fig. 23-4 “Short Name” Display

23.9 File Settings

Select the Ladder Editor 32NX optional functions.

[How to Operate]

- ① Select [Option] – [File Management], and the [File Management] dialog box appears.

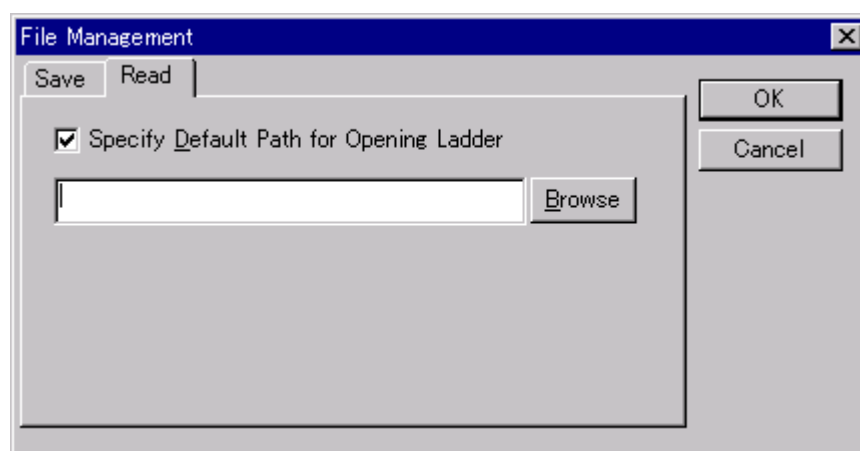
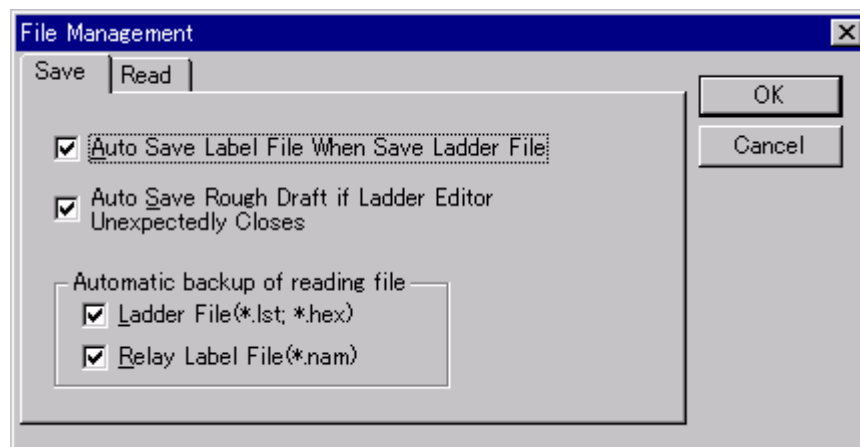


Fig. 23-5 [File Management] Dialog Box

Auto Save Label File When Save Ladder File:

Automatically stores a name file at the same time as a ladder file (or CMOS.HEX).
Refer to “23.3 Automatic Storing Function of Name File”.

Auto Save Rough Draft if Ladder Editor Unexpectedly Closes:

Automatically stores the existing data as a temporary file before editing when overwriting a line or inserting a line.

Refer to “23.4 Automatic Rough Draft File Storing Function”.

Automatic backup of reading file:

Creates a backup of an original file when storing a ladder file or name file.

Refer to “23.5 Automatic Backup Function of Read-in Files (Original Files)”.

Specify Default Path for Opening Ladder Files:

Sets the default folder of the [Open] dialog box which appeared when [File] – [Open] were selected.

24 CHANGING USER ACCOUNT LEVEL

Change the user account level in the [Enter Password] dialog box (Fig. 24-1 or 24-2).

[How to Operate]

- ① Displays the [Enter Password] dialog box for logging in.

Select [Option] – [Access Control] – [Enter Password].

- ② Input the password.

When a [Enter Password] dialog box appears, input the log-in name or the password, and click the [OK] button.

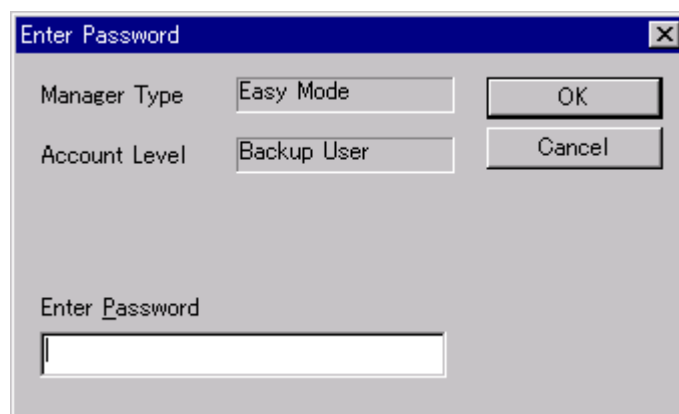


Fig. 24-1 [Enter Password] Dialog Box for Easy Mode

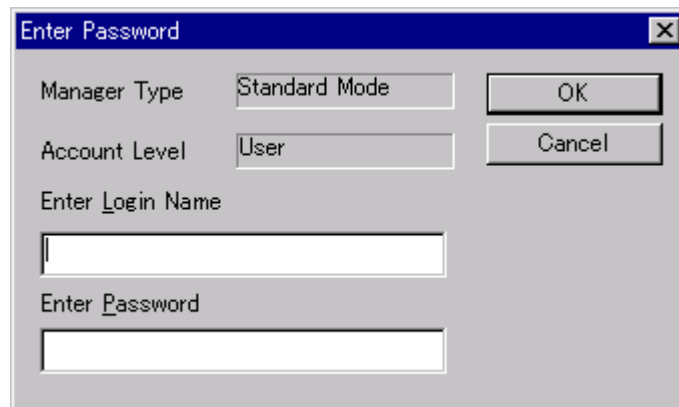


Fig. 24-2 [Enter Password] Dialog Box for Standard Mode

25 USER INFORMATION MANAGEMENT

25.1 How to Manage User Account

Ladder Editor 32NX manages the user accounts using the log-in names and the passwords to limit access to important data. The user accounts can be managed in “Easy Mode” and “Standard Mode”. The administrator of the user account levels can change the management mode. For strict user management, select “Standard Mode”. Table 25-1 describes the features of each management mode.

Table 25-1 Differences between “Easy Mode” and “Standard Mode”

Function	Easy Mode	Standard Mode
User ID input at log-in	Not necessary. Only the password is necessary.	Necessary
Password input at application startup	Selectable	Necessary
Registration, modification, and deletion of user	Not available	Available
User account level when the password input is not necessary at the startup	Backup user	Necessary

Note: “Easy Mode” is the default management mode when Ladder Editor 32NX is initially started up, and an [Enter Password] dialog box appears at the startup.

25.2 Difference Depending of the Account Levels

Table 25-2 shows the authorized functions for each account level.

Table 25-2 User Account Level

Account Level	1 Low ←	2	→ 3 High
Classification	Backup operator	Operator	Administrator
Meaning	Mode for backup operator	Mode for general operator	Mode for administrator who sets up Ladder Editor 32NX and is in charge of the maintenance of the system.
Authorized Functions	• Reading • Reading-in name files • Printing • Cross-referencing • Text output	• Reading • Read-in name files • Printing • Cross-referencing • Text output • Editing • Storing	• Reading • Read-in name files • Printing • Cross-referencing • Text output • Editing • Storing • Setting account management modes • Managing user information

The default users as shown in Table 25-3 have already been registered in the user accounts. Use the password assigned to each user.

Table 25-3 List of Default User Log-in Names

Account Level Name	User Name
Administrator	admin
Operator	user
Backup operator	backup

For each default user's password, refer to the “Default User Names and Password List” included with the shipment. The software administrator is responsible for storage and management of this list.

Any user other than the default users can be registered in the [User Manager] dialog box. (However, it is needed to perform the log-in for the user account at the “administrator” level.)

[How to Operate]

- ① Select [Option] – [Access Control] – [User Manager], and the [User Manager] dialog box appears as shown in Fig. 25-1.

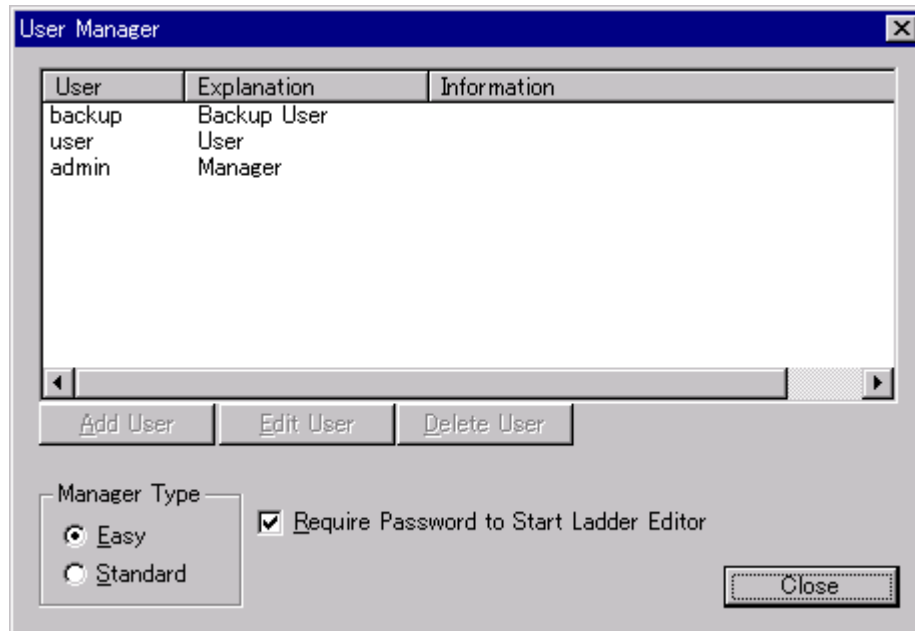


Fig. 25-1 [User Manager] Dialog Box

[Add User] button:

Adds a new user.

Refer to “25.3 Adding/Changing the User”.

[Edit User] button:

Changes the password or account level of the existing user. The default user information cannot be changed. (However, only password can be changed for the “user”.)

Refer to “25.3 Adding/Changing the User”.

[Delete User] button:

Deletes an existing user. The default users cannot be deleted.

Manage Type:

Select one of two methods to manage use accounts: “Standard Mode” and “Easy Mode”. Refer to “25.1 How to Manage User Accounts”.

“Require Password to Start Ladder Editor” check box:

Select this check box and the [Enter Password] dialog box will always appear the next time Ladder Editor 32NX is started up.

25.3 Adding/Changing the User

Click the [Add User] or [Edit User] button, and the [Register new user] dialog box (Fig. 25-2) or the [Edit an exist user] dialog box (Fig. 25-3) appears.

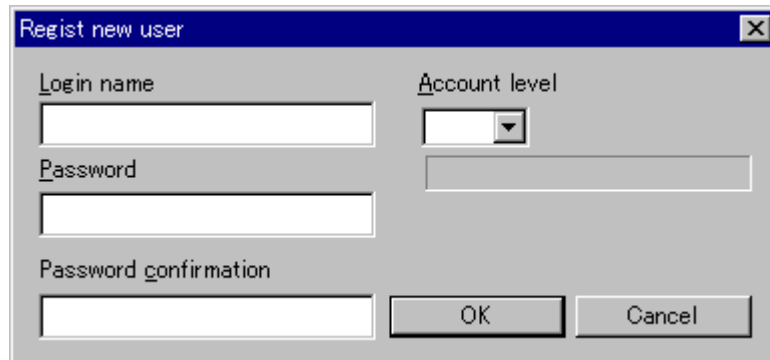
A Windows-style dialog box titled "Register new user" with a close button (X) in the top right corner. It contains three text input fields: "Login name" (empty), "Password" (empty), and "Password confirmation" (empty). To the right of the "Login name" field is a dropdown menu labeled "Account level" with a downward arrow. Below the "Password" field is another text input field labeled "Backup User" (empty). At the bottom right are two buttons: "OK" and "Cancel".

Fig. 25-2 [Register new user] Dialog Box

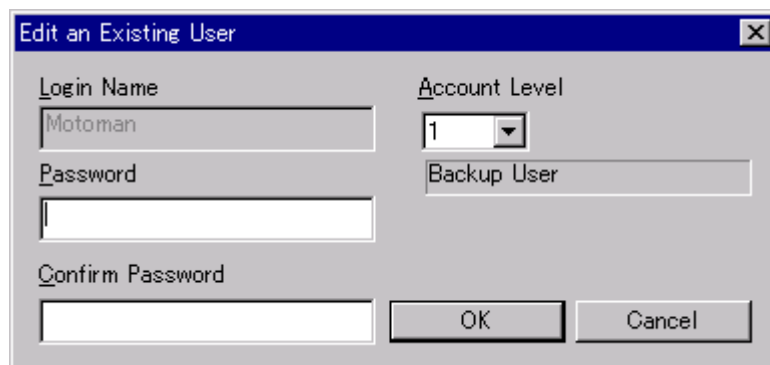
A Windows-style dialog box titled "Edit an Existing User" with a close button (X) in the top right corner. It contains three text input fields: "Login Name" (containing "Motoman"), "Password" (empty), and "Confirm Password" (empty). To the right of the "Login Name" field is a dropdown menu labeled "Account Level" with a downward arrow, showing the value "1". Below the "Password" field is another text input field labeled "Backup User" (containing "Backup User"). At the bottom right are two buttons: "OK" and "Cancel".

Fig. 25-3 [Edit an exist user] Dialog Box

Input the [Login Name], [Password], [Confirm Password], and [Account Level], and then click the [OK] button. The log-in name cannot be changed in the [Edit an exist user] dialog box.

26 APPENDIX

26.1 Description of Menu

Menu	Function	
File	—	
New	Creates a new ladder program in default.	
Open	Opens an existing ladder program.	
Close	Closes the ladder program that is being edited.	
Save	Saves an overwritten ladder program in which compiling after editing is completed successfully. To save a ladder program that is being edited and cannot be compiled, use [File] - [Save As Rough Draft].	
Save As	Select the storage file name to save the ladder program in which compiling is completed successfully.	
Save As Rough Draft	Outputs a rough draft file. <u>Can be selected when [Overwrite] or [Insert] is selected.</u>	
Open Relay Label File	Reads in a name file for the ladder program that is being edited.	
Save Relay Label File	Saves the relay name information. <u>Can be selected when a relay name is edited.</u>	
Save As Text Files	—	
Ladder Diagram	—	
User Section	Save file ladder diagram images of the user ladder.	
System Section	Save file ladder diagram images of the system ladder.	
Relay List	—	
User Section	Save file the relay No. list used in the user ladder.	
System Section	Save file the relay No. list used in the system ladder.	
Register List	—	
User Section	Save file the register No. list used in the user ladder.	
System Section	Save file the register No. list used in the system ladder.	
Relay State Table	Save file the relay No. use state matrix.	
Alarms and Messages.	Save file user alarms and user messages.	
Print	—	
Ladder Diagram	—	

Menu	Function	
User Section	Prints ladder diagram images of the user ladder.	
System Section	Prints ladder diagram images of the system ladder.	
Relay List	—	
User Section	Prints the relay No. list used in the user ladder.	
System Section	Prints the relay No. list used in the system ladder.	
Register List	—	
User Section	Prints the register No. list used in the user ladder.	
System Section	Prints the register No. list used in the system ladder.	
Relay State Table	Prints the relay No. use state matrix.	
Register State Table	Prints the register No. use state matrix.	
Alarms and Messages	Prints user alarms and user messages.	
Print Preview	—	
Ladder Diagram	—	
User Section	Previews ladder diagram images of the user ladder.	
System Section	Previews ladder diagram images of the system ladder.	
Relay List	—	
User Section	Previews the relay No. list used in the user ladder.	
System Section	Previews the relay No. list used in the system ladder.	
Register List	—	
User Section	Previews the register No. list used in the user ladder.	
System Section	Previews the register No. list used in the system ladder.	
Relay State Table	Previews the relay No. use state matrix.	
Register State Table	Previews the register No. use state matrix.	
Alarms and Messages	Prints user alarms and user messages.	
Print Setup	Displays the “printer setting” dialog box.	
Exit	Closes Ladder Editor 32NX.	
Edit	—	

Menu	Function	
Undo	Returns the edited contents to the previous state.	
Redo	Retries the operation that was returned to by [Return] operation.	
Insert New Rung	Inserts a new line after the selected line.	
Cut Rung	Deletes the ladder diagram information of the selected line.	
Copy Rung	Copies the ladder diagram information of the selected line.	
Paste Rung	Pastes the contents of [Cut Rung] or [Copy Rung] on the selected line. The ladder information that existed before pasting disappears.	
Insert Cut Copied Rung	Inserts the contents of [Cut Rung] or [Copy Rung] into the selected line. All the lines after the selected line are moved backward.	
Save Current Rung	—	
Overwrite	Overwrites and updates the ladder diagram information on the currently edited ladder diagram information for the currently displayed line.	
Insert	Inserts the currently edited ladder diagram information to the next line of the currently displayed line.	
Clear Current Rung	Clears the ladder diagram information of the currently displayed line.	
Header Information	Displays the header information of the ladder program in operation.	
Alarms and Messages	Displays the message information of the ladder program in operation.	
Relay Labels and Rung Comments	Displays the relay name list.	
Register Labels	Displays the register name list.	
Find Input Relays, Registers or Constants	—	
Specify Parameter	Searches for relay Nos., register Nos. or set constants.	
Backward	Searches for set values in the direction of the smaller line No..	
Forward	Searches for set values in the direction of the greater line Nos..	
Find Output Relays	Searches for relay Nos. used in the OUT terminal.	
Go to Rung	Searches for the specified line and jumps there.	
Go to First Rung	Moves to the first line.	
Go to Last Rung	Moves to the last line.	
View	—	
Main Toolbar	Switches between display/non-display of the tool bar.	

Menu	Function	
Navigation Toolbar	Switches between display/non-display of the search jump bar.	
Instruction Toolbar	Switches between display/non-display of the parts selection bar.	
Edit Toolbar	Switches between display/non-display of the parts control bar.	
Status Bar	Switches between display/non-display of the status bar.	
Relay Labels	Selects whether the relay short name is to be overlapped with the ladder diagram in the display.	
Output Relay User Table	Selects whether the line No. using each relay No. on the ladder diagram for the OUT terminal is to be overlapped with the parts in the display.	
Tools	—	
Check the Ladder	Compiles the currently displayed ladder program. Compiling checks for mistakes in the edited ladder program (such as overlapped relay Nos., measurement of processing time).	
Edit Instructions	—	
Delete Instruction	Changes the edit mode to the deletion mode.	
Edit Entire Row	—	
Insert Row	Changes the edit mode to the line insertion mode.	
Delete Row	Changes the edit mode to the line deletion mode.	
Edit Entire Column	—	
Insert Column	Changes the edit mode to the row insertion mode.	
Delete Column	Changes the edit mode to the row deletion mode.	
Edit Instruction Parameters	Changes the edit mode to the set value input mode.	
Edit Labels and Comments	Changes the edit mode to the name input mode.	
Quit the Editing Functions	Clears the edit mode.	
Add Instructions	—	
STR	Changes to the set mode of STR parts.	
STR-NOT	Changes to the setting mode of STR-NOT parts.	
GRP	Changes to the setting mode of GRP parts.	
TMR	Changes to the setting mode of TMR parts.	
CNT	Changes to the setting mode of CNT parts.	

Menu	Function	
OUT	Changes to the setting mode of OUT parts.	
ADD	Changes to the setting mode of ADD parts.	
SUB	Changes to the setting mode of SUB parts.	
MUL	Changes to the setting mode of MUL parts.	
DIV	Changes to the setting mode of DIV parts.	
MOD	Changing to the setting mode of MOD parts.	
BIN	Changes to the setting mode of BIN parts.	
BCD	Changes to the setting mode of BCD parts.	
MOV	Changes to the setting mode of MOV parts.	
WAND	Changes to the setting mode of WAND parts.	
WOR	Changes to the setting mode of WOR parts.	
WXOR	Changes to the setting mode of WXOR parts.	
WNOT	Changes to the setting mode of WNOT parts.	
SHL	Changes to the setting mode of SHL parts.	
SHR	Changes to the setting mode of SHR parts.	
ROL	Changes to the setting mode of ROL parts.	
ROR	Changes to the setting mode of ROR parts.	
PLS	Changes to the setting mode of PLS parts.	
PLF	Changes to the setting mode of PLF parts.	
Instruction User Table	Displays the list of lines which uses specified set values (relay Nos., register Nos., constants).	
Relay Use Table	Displays the relay No. use state matrix.	
Register Use Table	Displays the register No. use state matrix.	
Display Mnemonic	Displays the Mnemonic.	
Option	—	
Access Control	—	
Enter Password	Displays the “password input” display. Needed to edit in the system section.	
User Manager	Displays the “user manager” dialog box.	

Menu	Function	
Current Ladder Section	—	
User Section	Changes a ladder to be edited into a ladder in the user section.	
System Section	Changes a ladder to be edited into a ladder in the system section. Only users at the manager level can edit the ladders in the system section.	
Color Scheme	Sets the graphic color displayed in the “ladder editing” display.	
Font	—	
Edit Window	Sets the character font displayed in the “ladder editing” display.	
Preview Windows	Sets the character font displayed in the “ladder preview” display.	
Auto Save Current Rung	—	
Ask Before Saving	Detects modification to the ladder diagram when moving to another line during editing, and selects whether the message to verify modification is to be displayed or not.	
Overwrite Current Rung	With [Verify at Editing] above OFF, detects modification to the ladder diagram when moving to another line, and overwrites and updates the current line automatically.	
Insert New Rung	With [Verify at Editing] above OFF, detects modification to the ladder diagram when moving to another line, and inserts the current line automatically to the line to be jumped.	
File Management	Display File Management Dialog.	
Window	—	
Cascade	Overlaps windows.	
Tile	Displays windows side by side.	
Arrange Icons	Arranges icons of iconized window.	
HELP	—	
Help Topics	Displays the contents of HELP.	
Search Keyword	Displays the “keyword search” dialog box of HELP.	
Using Help	Displays how to use HELP.	
About Ladder Editor	Displays the version information.	

26.2 Description of Tool Bars

26.2.1 Main Tool Bar

Button	Function	Selection
	Creates a new ladder program file in default.	[File] - [New]
	Opens an existing ladder program.	[File] - [Open]
	Overwrites and saves a ladder program in which compiling after editing is completed successfully. To save a ladder program that is being edited and cannot be compiled, select [File] - [Save As Rough Draft.].	[File] - [Save]
	Deletes the ladder diagram information of the selected line.	[Edit] - [Cut Rung]
	Copies the ladder diagram information of the selected line.	[Edit] - [Copy Rung]
	Pastes the contents of [Cut Rung] or [Copy Rung] on the selected line. The ladder information that existed before pasting disappears.	[Edit] - [Paste Rung]
	Inserts the contents of [Cut Rung] or [Copy Rung] into the selected line. All the lines after the selected line are moved backward.	[Edit] - [Insert Cut/Copied Rung]
	Returns the edited contents to the previous state.	[Edit] - [Undo]
	Retries the operation that was returned to by [Return].	[Edit] - [Redo]
	Inserts a new line after the selected line.	[Edit] - [Insert new Rung]
	Overwrites and updates the currently edited ladder diagram information for the currently displayed line.	[Edit] - [Save Current Rung] - [Overwrite]
	Inserts the currently edited ladder diagram information to the next line of the currently displayed line.	[Edit] - [Save Current Rung] - [Insert]
	Compiles the currently displayed ladder program. Compiling checks for mistakes in the edited ladder program (such as overlapped relay Nos., measurement of processing time).	[Tool] - [Check the Ladder]
	Displays the list of lines which uses specified set values (relay Nos., register Nos., constants).	[Tool] - [Instruction Use Table]
	Displays the header information of the ladder program in operation.	[Edit] - [Header Information]
	Displays the message information of the ladder program in operation.	[Edit] - [Alarms and Messages]
	Changes a ladder to be edited into a ladder in the system section. Only users at the manager level can edit the ladders in the system section.	[Option] - [Current Ladder Section] - [System Section]
	Changes a ladder to be edited into a ladder in the user section.	[Option] - [Current Ladder Section] - [User Section]
	Displays the contents of HELP.	[Help] - [Help Topics]

26.2.2 Parts Control Tool Bar

Button	Function	Selection
	Changes the edit mode to the deletion mode.	[Tools] - [Edit Instructioins] - [Delete Instructions]
	Changes the edit mode to the line insertion mode.	[Tools] - [Edit Instructioins] - [Edit Entire Row] - [Insert Row]
	Changes the edit mode to the line deletion mode.	[Tools] - [Edit Instructioins] - [Edit Entire Row] - [Delete Row]
	Changes the edit mode to the row insertion mode.	[Tools] - [Edit Instructioins] - [Edit Entire Column] - [Insert Column]
	Changes the edit mode to the row deletion mode.	[Tools] - [Edit Instructioins] - [Edit Entire Column] - [Delete Column]
	Changes the edit mode to the set value input mode.	[Tools] - [Edit Instructioins] - [Edit &Instruction Parameters]
	Changes the edit mode to the name input mode.	[Tools] - [Edit Instructioins] - [Edit Labels and Comments]
	Clears the “ladder diagram information” display of the currently displayed line.	[Edit] - [Clear Current Rung]
	Clears the edit mode.	[Tools] - [Edit Instructioins] - [Quit the Editing Functions]

26.2.3 Search Jump Tool Bar

Button	Function	Selection
	Searches for relay Nos. used in the OUT terminal.	[Edit] - [Find & Output Relays]
	Searches for relay Nos., register Nos., or set constants.	[Edit] - [Find Input Relays, Registers or Constants] - [Specify Parameter]
	Searches for set values in the direction of the smaller line Nos..	[Edit] - [Find Input Relays, Registers or Constants] - [Backward]
	Searches for set values in the direction of the greater line Nos..	[Edit] - [Find Input Relays, Registers or Constants] - [Forward]
	Searches for the specified line and jumps there.	[Edit] - [Go to Rung]
	Moves to the first line.	[Edit] - [Go to First Rung]
	Moves to the last line.	[Edit] - [Go to Next Rung]
	Jumps backward in the jump history.	
	Jumps forward in the jump history.	

26.2.4 Ladder Parts Tool Bar

Button	Function	Selection
	Changes to the setting mode of STR parts.	[Tools] - [Add Instructions] - [STR]
	Changes to the setting mode of STR-NOT parts.	[Tools] - [Add Instructions] - [STR-NOT]
	Changes to the setting mode of GRP parts.	[Tools] - [Add Instructions] - [GRP]
	Changes to the setting mode of TMR parts.	[Tools] - [Add Instructions] - [TMR]
	Changes to the setting mode of CNT parts.	[Tools] - [Add Instructions] - [CNT]
	Changes to the setting mode of OUT parts.	[Tools] - [Add Instructions] - [OUT]
	Changes to the setting mode of ADD parts.	[Tools] - [Add Instructions] - [ADD]
	Changes to the setting mode of SUB parts.	[Tools] - [Add Instructions] - [SUB]
	Changes to the setting mode of MUL parts.	[Tools] - [Add Instructions] - [MUL]
	Changes to the setting mode of DIV parts.	[Tools] - [Add Instructions] - [DIV]
	Changing to the setting mode of MOD parts.	[Tools] - [Add Instructions] - [MOD]
	Changes to the setting mode of BIN parts.	[Tools] - [Add Instructions] - [BIN]
	Changes to the setting mode of BCD parts.	[Tools] - [Add Instructions] - [BCD]
	Changes to the setting mode of MOV parts.	[Tools] - [Add Instructions] - [MOV]
	Changes to the setting mode of WAND parts.	[Tools] - [Add Instructions] - [WAND]
	Changes to the setting mode of WOR parts.	[Tools] - [Add Instructions] - [WOR]
	Changes to the setting mode of WXOR parts.	[Tools] - [Add Instructions] - [WXOR]
	Changes to the setting mode of WNOT parts.	[Tools] - [Add Instructions] - [WNOT]
	Changes to the setting mode of SHL parts.	[Tools] - [Add Instructions] - [SHL]
	Changes to the setting mode of SHR parts.	[Tools] - [Add Instructions] - [SHR]
	Changes to the setting mode of ROL parts.	[Tools] - [Add Instructions] - [ROL]
	Changes to the setting mode of ROR parts.	[Tools] - [Add Instructions] - [ROR]
	Changes to the setting mode of PLS parts.	[Tools] - [Add Instructions] - [PLS]
	Changes to the setting mode of PLF parts.	[Tools] - [Add Instructions] - [PLF]

26.3 Name File Format

The following shows the format of a name file.

//TYPE:ARCWELD	: Ladder name
///11280	: Relay block No.
ssssssss,LLLLLLLL	: Name of 11280
aaaaaaaa,BBBBBBBB	: Name of 11281

↓ For eight items

,	
Arestart, arc off restart processing memory reset	
Restart, restart processing reset	
Inching, inching	
Retract, retract	: Name of 11287
///20010	: Next relay block No.
,External start	
,	
,Call master job	
,Alarm/error reset	
,	
,	
,	
,	
:	
:	

//REGISTER	: Specify register name section
M209=ssssssss,LLLLLLLLLL	: Register name
M210=Aconfirm relay sticking,	
arc confirm relay sticking	
M211=Arc shortageR,	
arc shortage (robot side)	
M212=Power failure, welder malfunction	
M213=Retract request, wire retract request	
:	
:	

[Relay Name:]

Short name	: Within 8 characters
Long name	: Within 60 characters

[Register Name:]

M000 = Short name, long name

Short name	: Within 8 characters
Long name	: Within 60 characters

“M” must be added to the first character in the name.

26.4 Frequently-asked questions

When the driver has been installed with USB type key connected to personal computer

1. Under the state that the USB type key is attached to personal computer, delete the item registered as "USB Token" in Device Manager.
 2. Uninstalled the driver (Sentinel System Driver 5.41.1(32-bit)) with [Add/Remove Programs].
 3. Install the driver with key detached from personal computer.
- With the procedure above, the driver can be performed normally.

When the previous version driver (Ver.PD-5.39.2) has been installed after installing the driver Ver.PD-5.41.1

In this case, a problem may arise rarely. Therefore, uninstall the driver Ver.PD-5.39.2 (Sentinel System Driver) by [Add / Remove Programs].

When the software program doesn't start properly with D-SUB type.

There is a possibility that the driver of the hardware lock key is old type or doesn't exist.

Execute "¥SentinelDriver¥SSD5411-32bit.EXE" of installation CD-ROM. Refer to "¥SentinelDriver¥Manual¥us¥Readme.pdf" for the installation procedure.

Note: Be sure to install the driver under WindowsXP/2000 environment.

Note: When installing the driver under WindowsXP/2000 environment, be sure to login on administrator mode in order to add files to system folder and input information in registry.